

Power Procedures Table

Model Numbers:

641 -002 thru -005



Service and Parts Manual



MA775900p

FOR USE BY MIDMARK TRAINED TECHNICIANS ONLY

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Symbols



DANGER

*Indicates an imminently hazardous situation which **will** result in serious or fatal injury if not avoided. This symbol is used only in the most extreme conditions.*



WARNING

*Indicates a potentially hazardous situation which **could** result in serious injury if not avoided.*



CAUTION

*Indicates a potentially hazardous situation which **may** result in minor or moderate injury if not avoided. It may also be used to alert against unsafe practices.*



Equipment Alert

Indicates a potentially hazardous situation which could result in equipment damage if not avoided.



In Section A, test the components in the order indicated. (ex. 1st ✓ then, 2nd ✓)

Refer to Section B for component testing procedures.

The symbols below may be used in this manual to represent the operational status of table functions and components.



Indicates the function / component is working properly. No action required.



Indicates the function / component is working, but a problem exists.



Indicates the function / component is not working at all.

Ordering Parts

The following information is required when ordering parts:

- Serial number & model number
- Part number for desired part.

[Refer to Exploded Views / Parts Lists section]

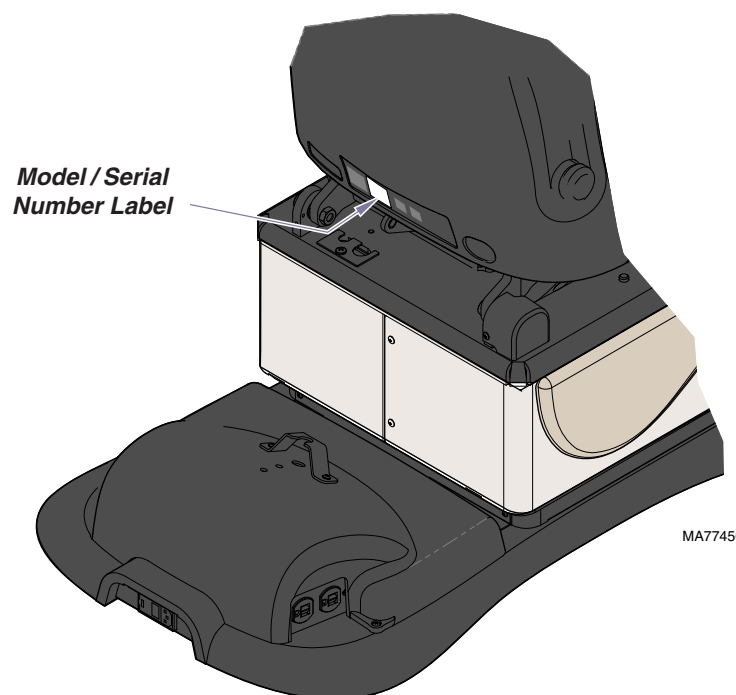
Non-warranty parts orders may be faxed to Midmark using the Fax Order Form in the back of this manual.

For warranty parts orders, call Midmark's Technical Service Department with the required information.

Hours: 8:00 am until 5:00 pm EST [Monday - Friday]

Phone: 1-(800)-Midmark

Model / Serial Number Location



MA7745001

General Information

Specifications

Patient Weight (maximum) 450 lbs (204 kgs)

Range of Motion See illustration on this page

Dimensions See illustration on next page

Weight of Table:

w/ Standard Base 440 lbs (200 kg)

w/ Rotational Base 525 lbs (238 kg)

(Note: For packaged weight, contact Midmark Customer Service)

Power Cord: 8 ft. (243.8 cm) long

Electrical Requirements: See Compliance Charts

Foot / Hand Control Voltage: 10 VAC, SELV (Safety Extra Low Voltage)

Duplex Receptacle (optional)

maximum load: 115 VAC, 5A, 50/60 Hz

Fuses:

Main Power (located at power cord inlet):

F1 & F2 6.3A, 250V, Type-T, 5 x 20 mm
High-Breaking Current

Duty Cycle:

Actuator motor run time: Intermittent Operation
(30 seconds ON / 5 minutes off)

Classifications: Class 1, Type B Applied Part,

Protection against ingress of fluids: Ordinary Equipment

Foot Control only: IPX1

Regulatory Compliance: See Compliance Charts

Table Speeds (by function):

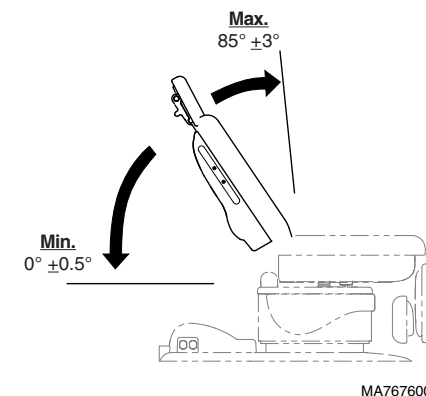
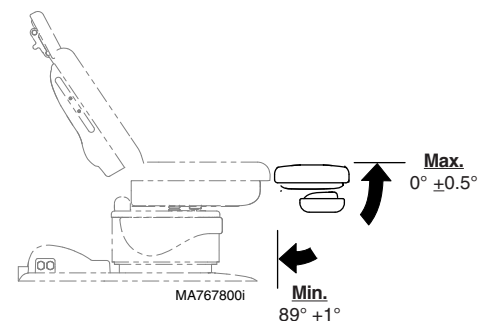
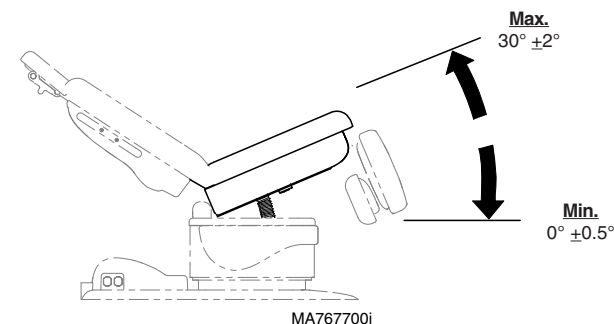
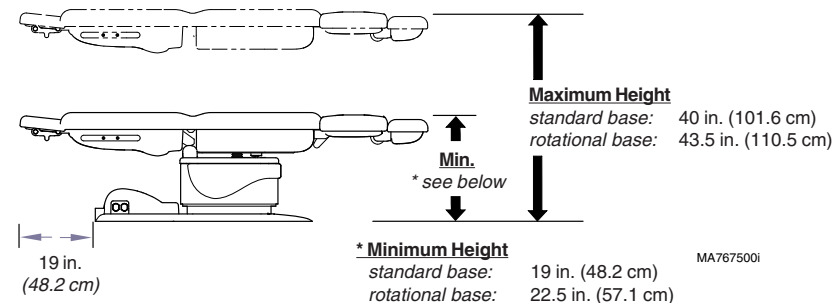
Back / Tilt:

w/Patient Load <200lbs (<90 kg) less than 16 seconds

w/Patient Load >200lbs (>90 kg) less than 20 seconds

Base less than 20 seconds

Foot less than 14 seconds



Equipment not suitable for use in the presence of a flammable anesthetic mixture with air, or with oxygen, or nitrous oxide.

General Information

Model Identification / Compliance Chart

Model	Description	Complies To:				Electrical Ratings:		
		UL 60601-1	CAN/CSA 22.2, #601.1-M90	EN 60601-1	EN 60601-1-2 (EMC)	VAC +/-10%	Amps	Cycles (Hz)
641-002	Power Procedures Chair <i>(Non-Programmable)</i>	•	•	•	•	Configurable		50 / 60
						115 230	8.5 4.5	
641-003	Power Procedures Table <i>(Programmable)</i> <i>w/ Receptacles</i>	•	•	•	•	115	11.5	50 / 60
641-004	Power Procedures Chair <i>(Non-Programmable)</i> <i>w/Rotational Base</i>	•	•	•	•	Configurable		50 / 60
						115 230	8.5 4.5	
641-005	Power Procedures Table <i>(Programmable)</i> <i>w/ Rotational Base</i>	•	•	•	•	Configurable		50 / 60
						115 230	8.5 4.5	

Fire Code Ratings:

All upholstery complies with California Bureau of Home Furnishing Technical Bulletin 117.

Optional upholstery is available that complies with California Bureau of Home Furnishing Technical Bulletin 133.

General Information

Scheduled Maintenance 641 Power Procedures Chair			
Interval	Inspection or Service	Service, Adjust, Repair, and / or Replace as Required (Refer to appropriate S&P or Quick Reference Guide)	641
Weekly	Cleaning	Clean upholstery with appropriate diluted bleach solution 10:1 (water:bleach)	X
		Wipe painted metal & plastic surfaces with a clean soft cloth and mild cleaner. <i>(NOTE: Periodic application of common furniture wax will ease cleaning, and maintain the luster of the surfaces).</i>	X
	Obvious Damage	Visually inspect components for damage that could cause problems during operation or unsafe operation.	X
Semi-Annually	Mechanical Operation	Check all mechanical functions using the foot control. Repeat using the hand control when present.	X
		Table shrouds should move smoothly & quietly when base is raised & lowered. <i>(NOTE: There are plastic glides on the shroud tabs. Missing glides may result in noisy operation)</i>	X
	Labels / Decals	Replace any missing or illegible labels.	X
	Hardware	All fasteners must be present and fastened securely.	X
	Electrical System	Inspect power cord and all wiring for damage.	X
		Be sure all electrical connections are tight.	X
Date of Service: ____/____/____ Location: Service Technician:			Model: Serial Number:

General Information

Warranty Information

SCOPE OF WARRANTY

Midmark Corporation ("Midmark") warrants to the original purchaser its new Alternate Care products and components (except for components not warranted under "Exclusions") manufactured by Midmark to be free from defects in material and workmanship under normal use and service. Midmark's obligation under this warranty is limited to the repair or replacement, at Midmark's option, of the parts or the products the defects of which are reported to Midmark within the applicable warranty period and which, upon examination by Midmark, prove to be defective.

APPLICABLE WARRANTY PERIOD

The applicable warranty period, measured from the date of delivery to the original user, shall be one (1) year for all warranted products and components.

EXCLUSIONS

This warranty does not cover and Midmark shall not be liable for the following: (1) repairs and replacements because of misuse, abuse, negligence, alteration, accident, freight damage, or tampering; (2) products which are not installed, used, and properly cleaned as required in the Midmark "Installation" and or "Installation / Operation Manual for this applicable product. (3) products considered to be of a consumable nature; (4) accessories or parts not manufactured by Midmark; (5) charges by anyone for adjustments, repairs, replacement parts, installation, or other work performed upon or in connection with such products which is not expressly authorized in writing in advance by Midmark.

EXCLUSIVE REMEDY

Midmark's only obligation under this warranty is the repair or replacement of defective parts. Midmark shall not be liable for any direct, special, indirect, incidental, exemplary, or consequential damages or delay, including, but not limited to, damages for loss of profits or loss of use.

NO AUTHORIZATION

No person or firm is authorized to create for Midmark any other obligation or liability in connection with the products.

THIS WARRANTY IS MIDMARK'S ONLY WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. MIDMARK MAKES NO IMPLIED WARRANTIES OF ANY KIND INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS.

Additional Information

Failure to follow the guidelines listed below will void the warranty and/or render the table unsafe for use.

- If a malfunction is detected, do not use the table until necessary repairs are made.
- Do not attempt to disassemble table, replace components, or perform adjustments unless you are a Midmark authorized service technician.
- Do not use another manufacturer's parts to replace malfunctioning components. Use only Midmark replacement parts

General Information

Section A

Operation & Troubleshooting



Function / System

[Go To Page:](#)

Power To The Table:

models w/Standard Base A-2

models w/Rotational Base A-4

Base Up / Down A-8

Back Up / Down A-18

Tilt Up/Down A-23

Foot Up/Down A-30

Crash Avoidance System A-38

Position Programming A-41

"Home" Function A-44

Quick Chair Function A-49

Foot Extension A-52

Table Receptacles A-54

Rotational Base Brake System A-56

Click on the Go To Page button and enter the desired page number. (Note: Letters are case sensitive. ex. E-2)

Operation & Troubleshooting

Power To The Table (models w/ Standard Base)

This illustration shows only the components that affect ALL TABLE FUNCTIONS.

Refer to the following page for a detailed description of the power supply to the table.

Troubleshooting

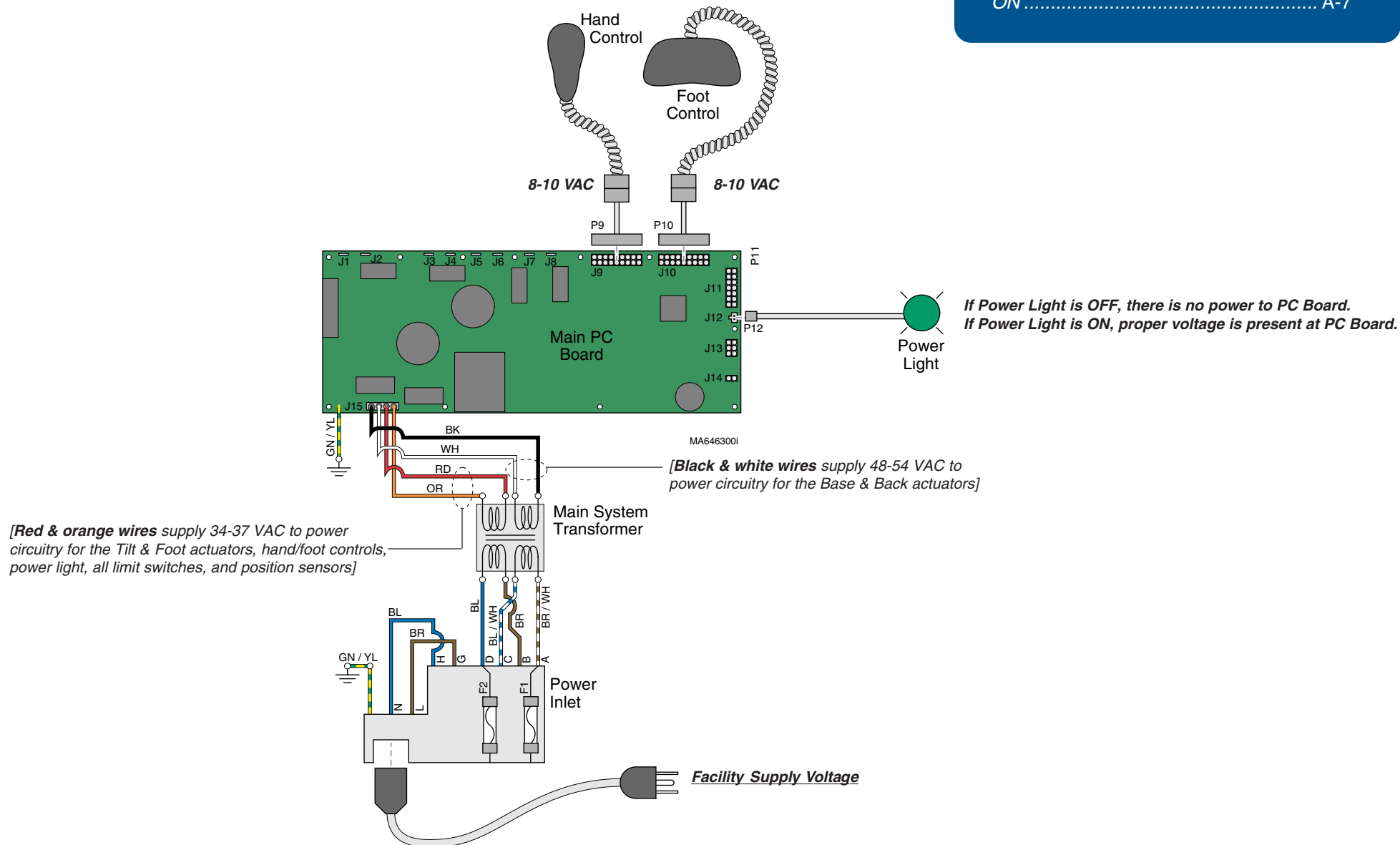
[No Power / No Functions Will Operate]

Power Light is:

Go To Page:

OFF A-6

ON A-7



Operation & Troubleshooting

Power To The Table (models w/ Standard Base)

Facility Supply Voltage

With the table's power cord properly connected, facility supply voltage (115 or 230 VAC) is supplied thru the cord to the power inlet.

Power Inlet



EQUIPMENT ALERT

The voltage setting displayed in the power inlet window must match facility supply voltage (115 or 230 VAC).

[Remove fuse holder and rotate 180° to change voltage setting].

Current flows thru two fuses in the power inlet, to the main system transformer.

Main System Transformer

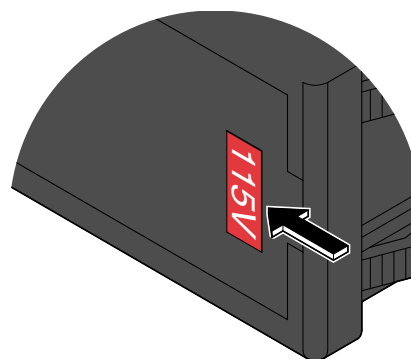
NOTE

This transformer is protected from overload by a thermal cutout feature. This will automatically reset when the transformer cools.

Line voltage (115 or 230 VAC) is supplied to the main system transformer. The transformer reduces the voltage and current flows to the main PC board thru two separate windings (four wires).

[The black & white wires supply 48-54 VAC to power circuitry for the Base & Back actuators only].

[The red & orange wires supply 34-37 VAC to power circuitry for the Tilt & Foot actuators, hand/foot controls, power light, all limit switches, and position sensors (on Midmark models only)].



Power Indicator Light

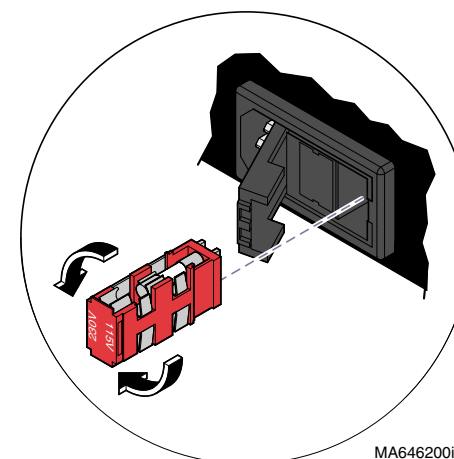
When voltage is applied to the PC board, the power light is illuminated.

Main PC Board

Circuitry on the PC board provides the required voltage to power all of the table's components: *hand/foot controls, actuators, limit switches, and position sensors.*

Hand / Foot Controls

Circuitry on the main PC board supplies 8-10 VAC to the hand / foot control connection ports.



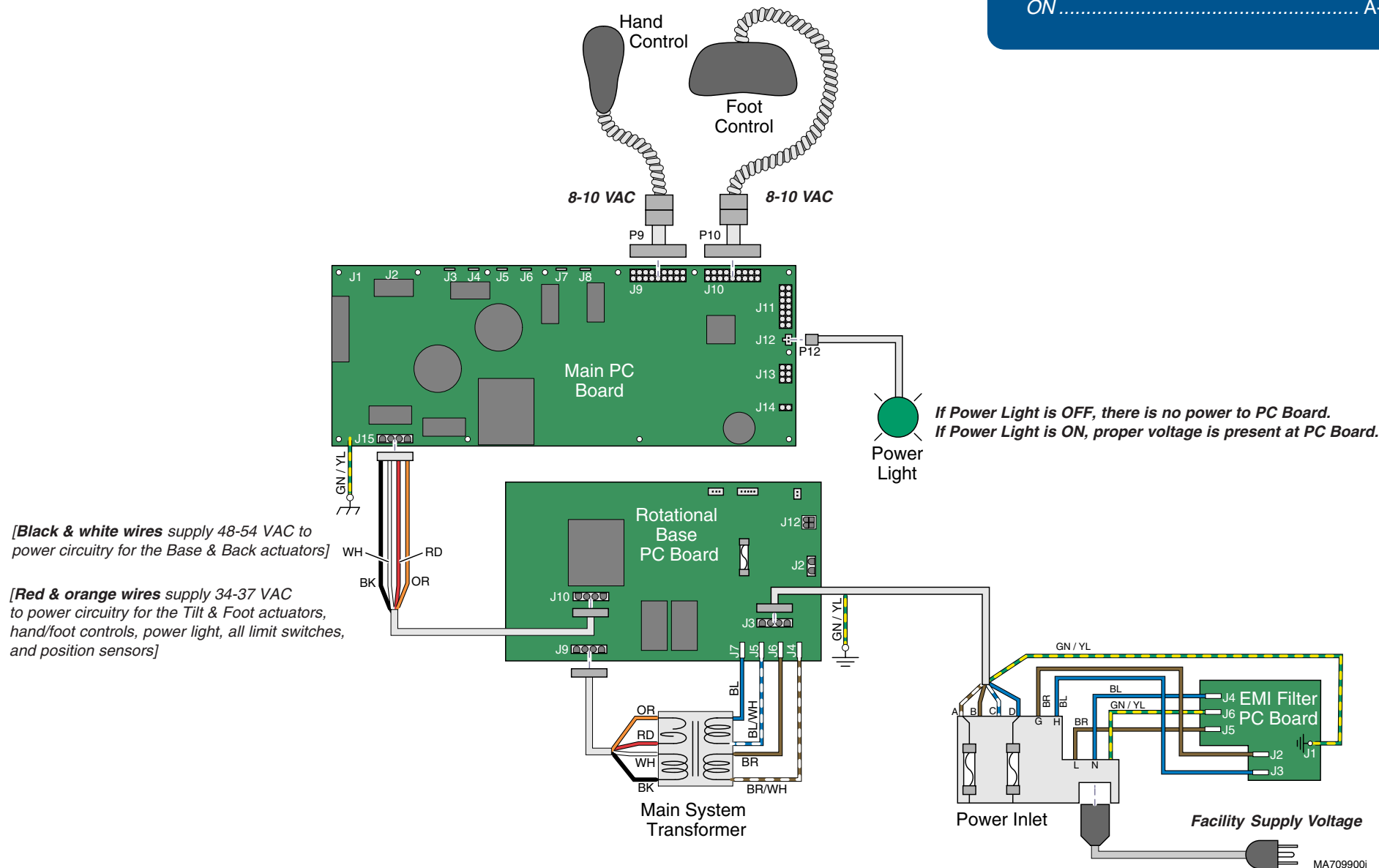
MA646200i

Operation & Troubleshooting

Power To The Table (models w/ Rotational Base)

This illustration shows only the components that affect ALL TABLE FUNCTIONS.

Refer to the following page for a detailed description of the power supply to the table.



Operation & Troubleshooting

Power To The Table (models w/ Rotational Base)

Facility Supply Voltage

With the table's power cord properly connected, facility supply voltage (115 or 230 VAC) is supplied thru the cord to the power inlet.

Power Inlet / EMI Filter Board

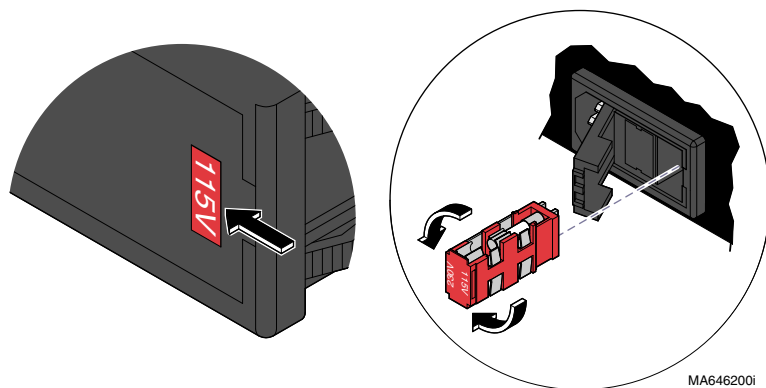


EQUIPMENT ALERT

The voltage setting displayed in the power inlet window must match facility supply voltage (115 or 230 VAC).

[Remove fuse holder and rotate 180° to change voltage setting].

Current flows from the power inlet thru the EMI filter board, then back thru the power inlet fuses to the rotational base PC board.



Rotational Base PC Board

Current flows thru the rotational base PC board to the main system transformer. The transformer reduces the voltage and current flows back to the rotational base PC board.

Circuitry on the rotational base PC board provides the required voltage to power the rotational base brake system.

The reduced voltage is supplied to the main PC board thru the rotational base PC board.

Main System Transformer

NOTE

This transformer is protected from overload by a thermal cutout feature. This will automatically reset when the transformer cools.

Line voltage (115 or 230 VAC) is supplied to the main system transformer thru the rotational base PC board. The transformer reduces the voltage and current flows back to the rotational base PC board, then to the main PC board thru two separate windings (four wires).

[The black & white wires supply 48-54 VAC to power circuitry for the Base & Back actuators only].

[The red & orange wires supply 34-37 VAC to power circuitry for the Tilt & Foot actuators, hand/foot controls, power light, all limit switches, and position sensors (on Midmark models only)].

Power Indicator Light

When voltage is applied to the PC board, the power light is illuminated.

Main PC Board

Circuitry on the PC board provides the required voltage to power all of the table's components: hand/foot controls, actuators, limit switches, and position sensors.

Hand / Foot Controls

Circuitry on the main PC board supplies 8-10 VAC to the hand / foot control connection ports.

Operation & Troubleshooting

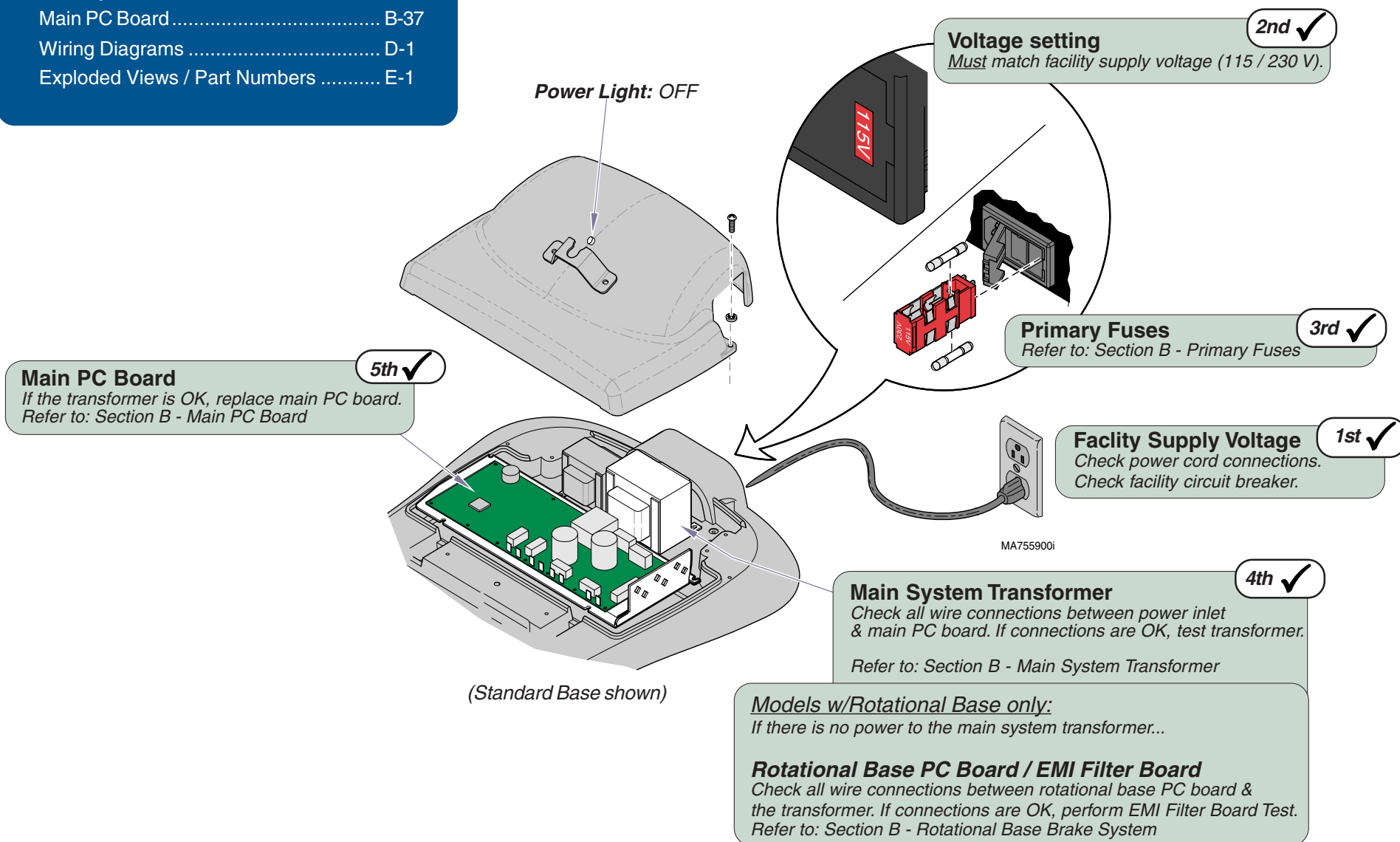
Refer To:

Primary Fuses	B-2
Main System Transformer	B-29
Main PC Board	B-37
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Go To Page:

Power to the Table - continued

Problem: No functions will operate - and Power light is **OFF**.

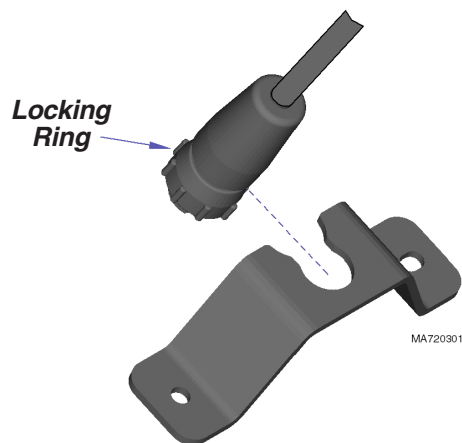


Operation & Troubleshooting

Power to the Table - continued

Problem: No functions will operate - **and** Power light is **ON**.

Note: The cord connector is "keyed" and must be oriented properly to connect. Tighten lockig ring to secure connector.



Hand / Foot Controls

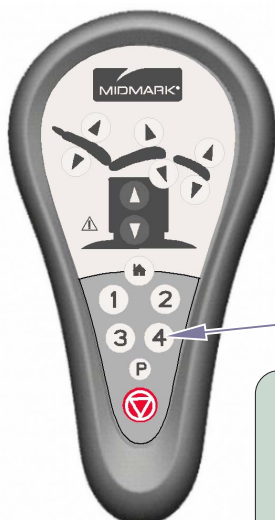
Check cords for damage / proper connection.
Check both connection ports on table.

Refer to: Section B - Hand & Foot Controls

1st ✓

Loose / Damaged Wire Connections (between connection ports & PC board)

3rd ✓



Position "4" Button

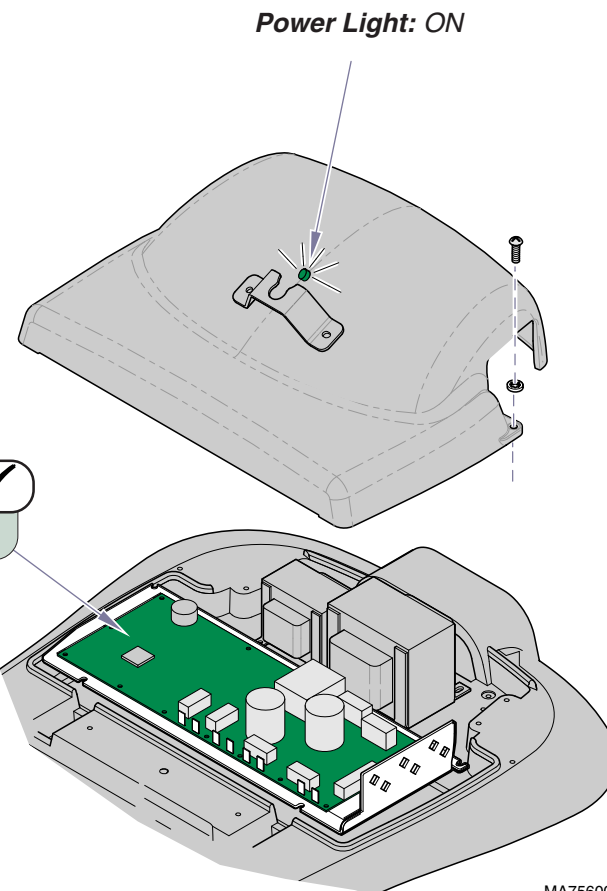
Programmable Models only:
Press "4" button on hand control for five seconds, then try functions again...
If table functions operate, go to Section B, Main PC Board (Hand/Foot Control Lockout Feature)
If table functions still will not move, go to next check.

2nd ✓

Check for error code(s)

Refer to: Section B - Main PC Board

4th ✓



(Standard Base shown)

MA756000i

Refer To:

Hand & Foot Controls B-3
Main PC Board B-37
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Go To Page:

Models:
Serial Numbers:

ALL

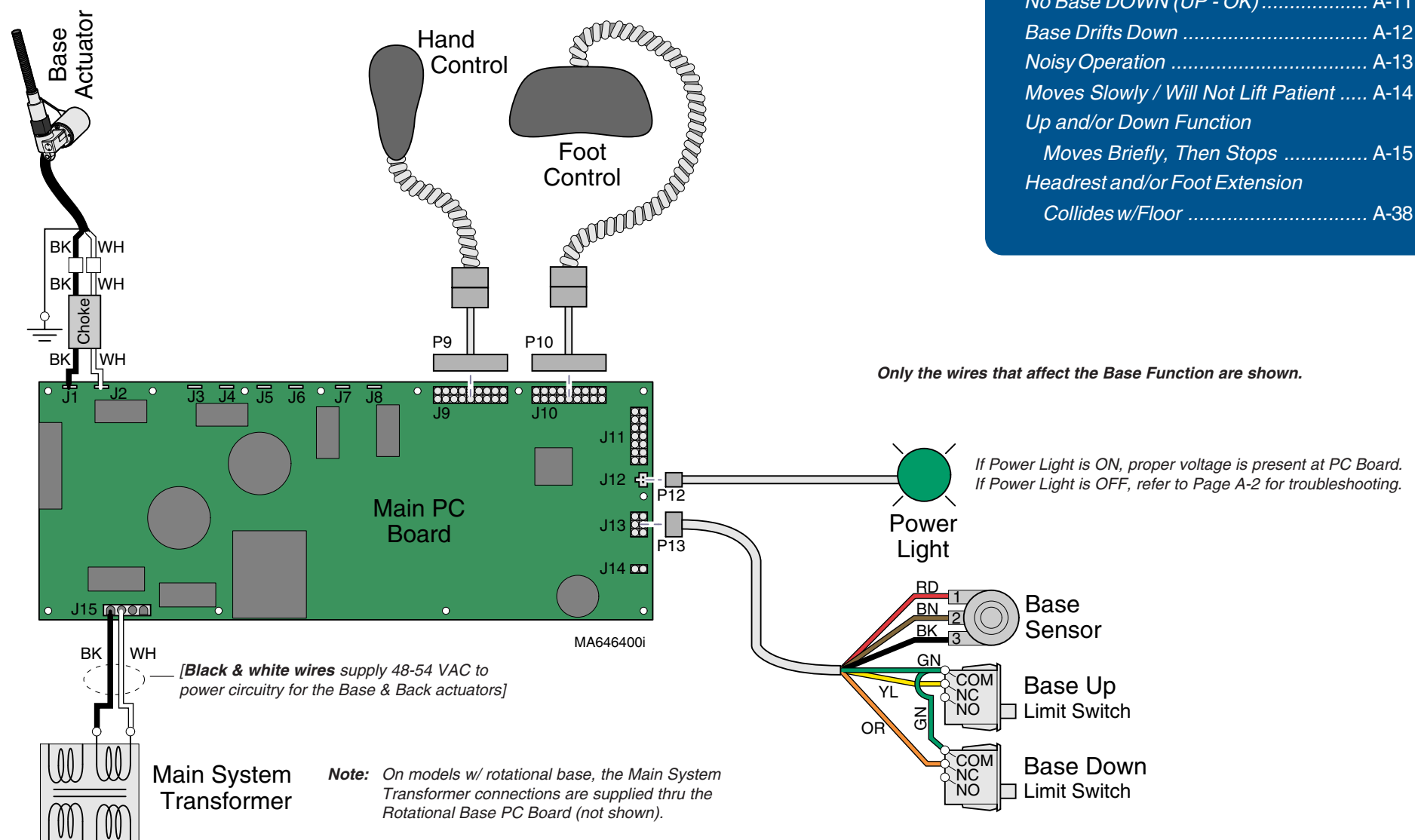
Power To The Table

A-7

Operation & Troubleshooting

Base UP / DOWN Function

This illustration shows only the components that affect the Base UP / DOWN function. Refer to the following page for a detailed description of Base UP / DOWN operation.



Troubleshooting

[Base Up / Down Function]

Problem

Go To Page:

No Base UP or DOWN	A-10
No Base UP (DOWN - OK)	A-11
No Base DOWN (UP - OK)	A-11
Base Drifts Down	A-12
Noisy Operation	A-13
Moves Slowly / Will Not Lift Patient	A-14
Up and/or Down Function	
Moves Briefly, Then Stops	A-15
Headrest and/or Foot Extension	
Collides w/Floor	A-38

Operation & Troubleshooting

Base UP / DOWN Function

Is There Power To The Table?

When voltage is present at the PC board, the power light is illuminated.

[Refer to 'Power To The Table' (page A-2), for description of current flow to the PC board].

Power To Foot / Hand Controls

Circuitry on the PC board supplies 8-10 VAC to the hand / foot control connection ports.

Base Up Operation

When the Base Up function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the base actuator motor.

The actuator motor runs and raises the table.

NOTE

The PC board continuously monitors the Base Up limit switch and the Base position sensor.

If the Base Up limit switch is tripped (open), the Base Up function will not operate.

If the Base position sensor detects that the table has reached its upper limit, the Base Up function will not operate.

Actuator Motor runs until:

1. Hand / foot control button is released.
2. Base Up limit switch is tripped.
3. Emergency Stop button is pressed.
4. Position Sensor detects upper limit.
5. Overcurrent protection tripped.
6. Software time-out limit is reached (approx. 25 seconds).

Base Down Operation

When the Base Down function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 40 VDC to the base actuator motor.

The actuator motor runs and lowers the table.

NOTE

The PC board continuously monitors the Base Down limit switch and the Base position sensor.

If the Base Down limit switch is tripped (open), the Base Down function will not operate.

If the Base position sensor detects that the table is in a potential "crash position", or that the base has reached its lower limit, the Base Down function will not operate.*

Actuator Motor runs until:

1. Hand / foot control button is released.
2. Base Down limit switch is tripped.
3. Emergency Stop button is pressed.
4. Crash Avoidance System activated*.
5. Position Sensor detects lower limit.
6. Overcurrent protection tripped.
7. Software time-out limit is reached (approx. 25 seconds).

***Note:** Refer to *Section A: Crash Avoidance System* for a detailed description of "crash position", and the table functions that are disabled.

Operation & Troubleshooting

Refer To:

Hand & Foot Controls	B-3
Base Actuator / Limit Switches	B-6
Main PC Board	B-37
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Go To Page:

Base Up / Down Function - continued

Problem: No Base Up or Base Down

Loose / Damaged Wire Connections

(Base Actuator, Base Up/Down Limit Switches, hand/foot control ports, black & white wires between main system transformer & PC board)

1st ✓

Main PC Board

Refer to: Section B - Main PC Board

4th ✓

Base Actuator

Refer to: Section B - Base Actuator / Limit Switches

3rd ✓

Hand / Foot Control

Refer to: Section B - Hand & Foot Controls

2nd ✓



Base Up / Down

Models:
Serial Numbers:

ALL

Operation & Troubleshooting

Base Up / Down Function - continued

Problem: No Base Up. [Base Down - OK]
-or-
 No Base Down. [Base Up - OK]

Attention: If Base Down is inoperable, move the other chair functions to the positions listed below:

Back / Foot: full UP
Tilt: full DOWN

If Base Down function becomes operable,
 refer to: Section A - Crash Avoidance System

Refer To:

Crash Avoidance System A-38
 Hand & Foot Controls B-3
 Base Actuator / Limit Switches B-6
 Main PC Board B-37
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

Go To Page:

Loose / Damaged Wire Connections

(Hand/Foot Control & Base Up / Down Limit Switches)

1st ✓

Base Up/Down Limit Switches

Refer to: Section B - Base Actuator / Limit Switches

2nd ✓

Base Actuator

Refer to: Section B - Base Actuator / Limit Switches

4th ✓

Main PC Board

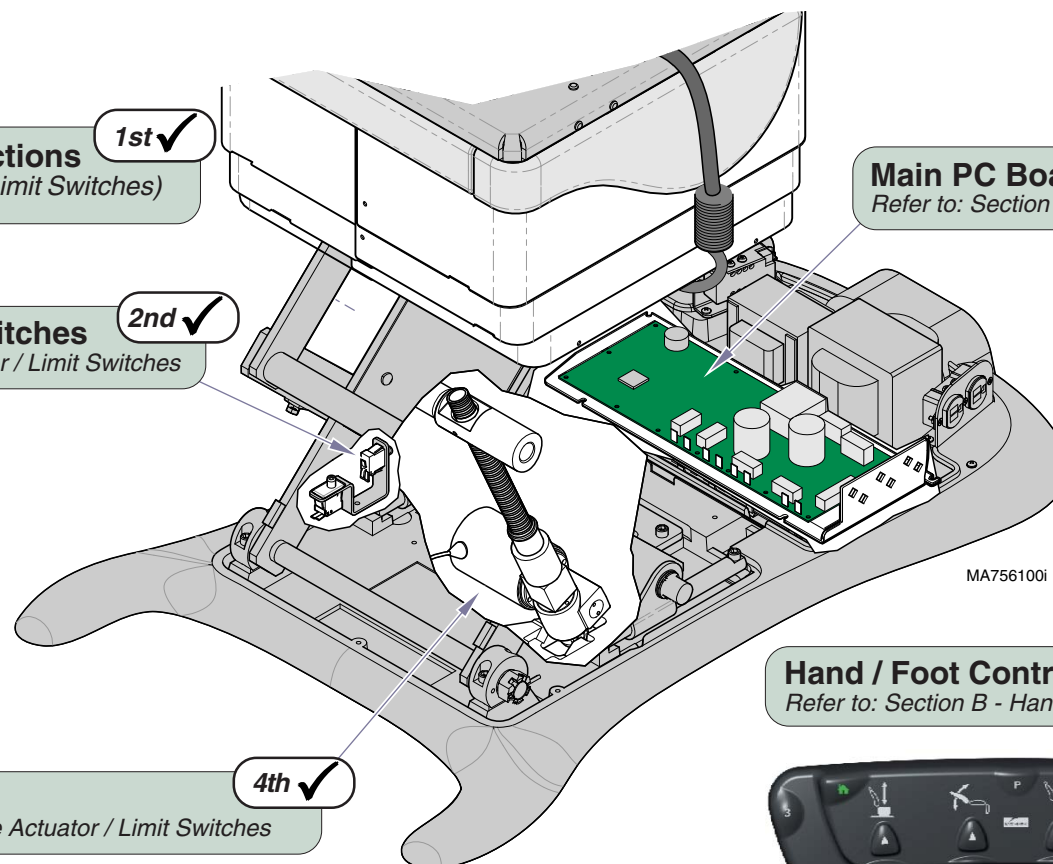
Refer to: Section B - Main PC Board

5th ✓

Hand / Foot Control

Refer to: Section B - Hand & Foot Controls

3rd ✓



Models:
Serial Numbers:

ALL

Base Up / Down

A-11

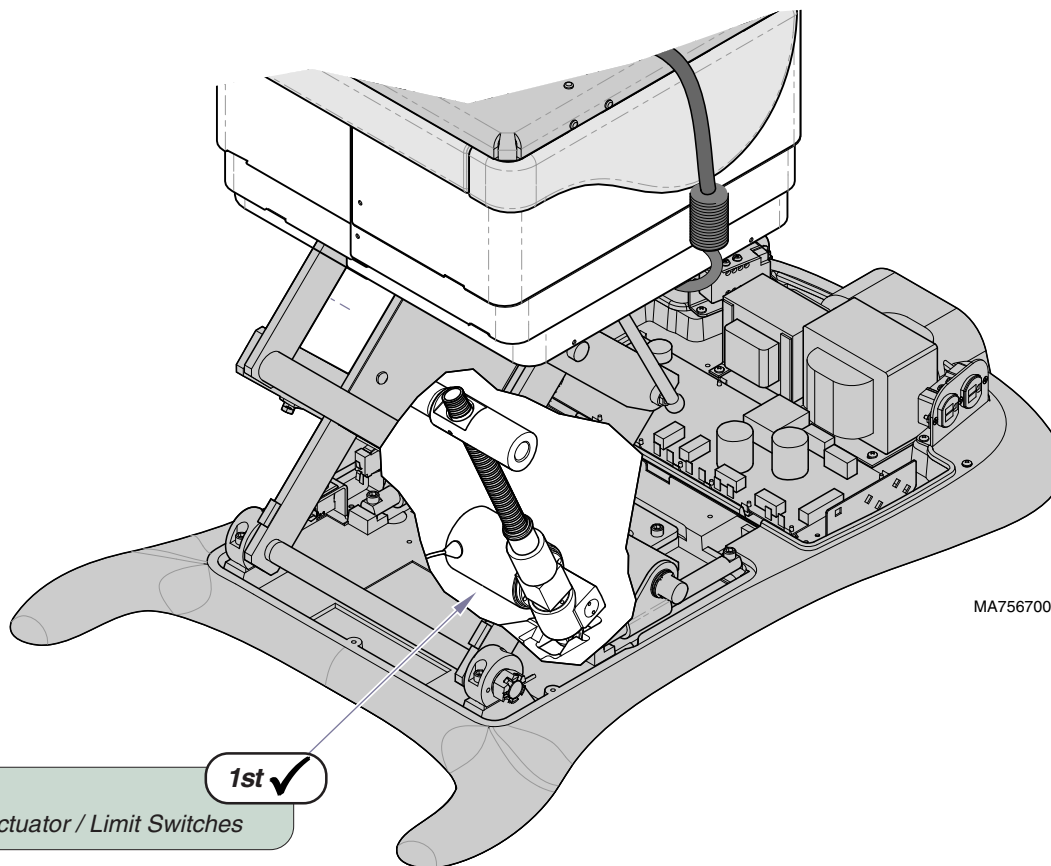
Operation & Troubleshooting

Refer To:

Base Actuator / Limit Switches B-6

Wiring Diagrams D-1

Exploded Views / Part Numbers E-1

Go To Page:**Base Up / Down Function - continued****Problem:** Base drifts down.**Base Actuator**

Refer to: Section B - Base Actuator / Limit Switches

1st ✓

Operation & Troubleshooting

Base Up / Down Function - continued

Problem: Noisy operation. (Grinding, squeaking, etc)

Refer To:

Base Actuator / Limit Switches B-6
 Gas Springs B-27
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

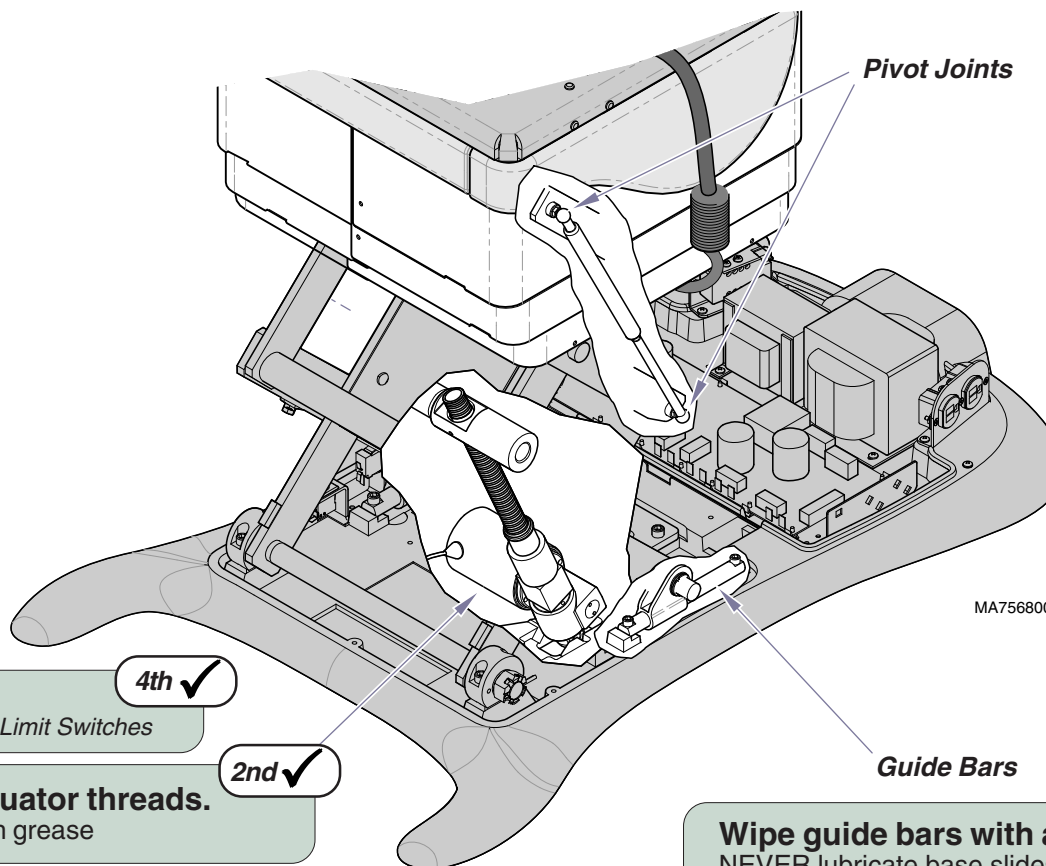
Go To Page:

Clean / lubricate gas spring pivot joints

Recommended lubricant: Lithium grease

Refer to: Section B - Gas Springs

1st ✓



Pivot Joints

MA756800i

Guide Bars

Base Actuator

Refer to: Section B - Base Actuator / Limit Switches

4th ✓

Clean / lubricate base actuator threads.

Recommended lubricant: Lithium grease

2nd ✓

Wipe guide bars with a clean, dry cloth.
NEVER lubricate base slides / scissor mechanism.

3rd ✓

Models:
Serial Numbers:

ALL

Base Up / Down

A-13

Operation & Troubleshooting

Refer To:

General Information (*Specifications*) ii
 Base Actuator B-6
 Gas Springs B-27
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

Go To Page:

Base Up / Down Function - *continued*

Problem: Moves slowly - *and/or*
 Will not lift patient.

Did patient exceed 450 lb. weight limit?

Inform staff that max. patient weight is 450 lbs.

Refer to: General Information section

1st ✓

Gas Springs

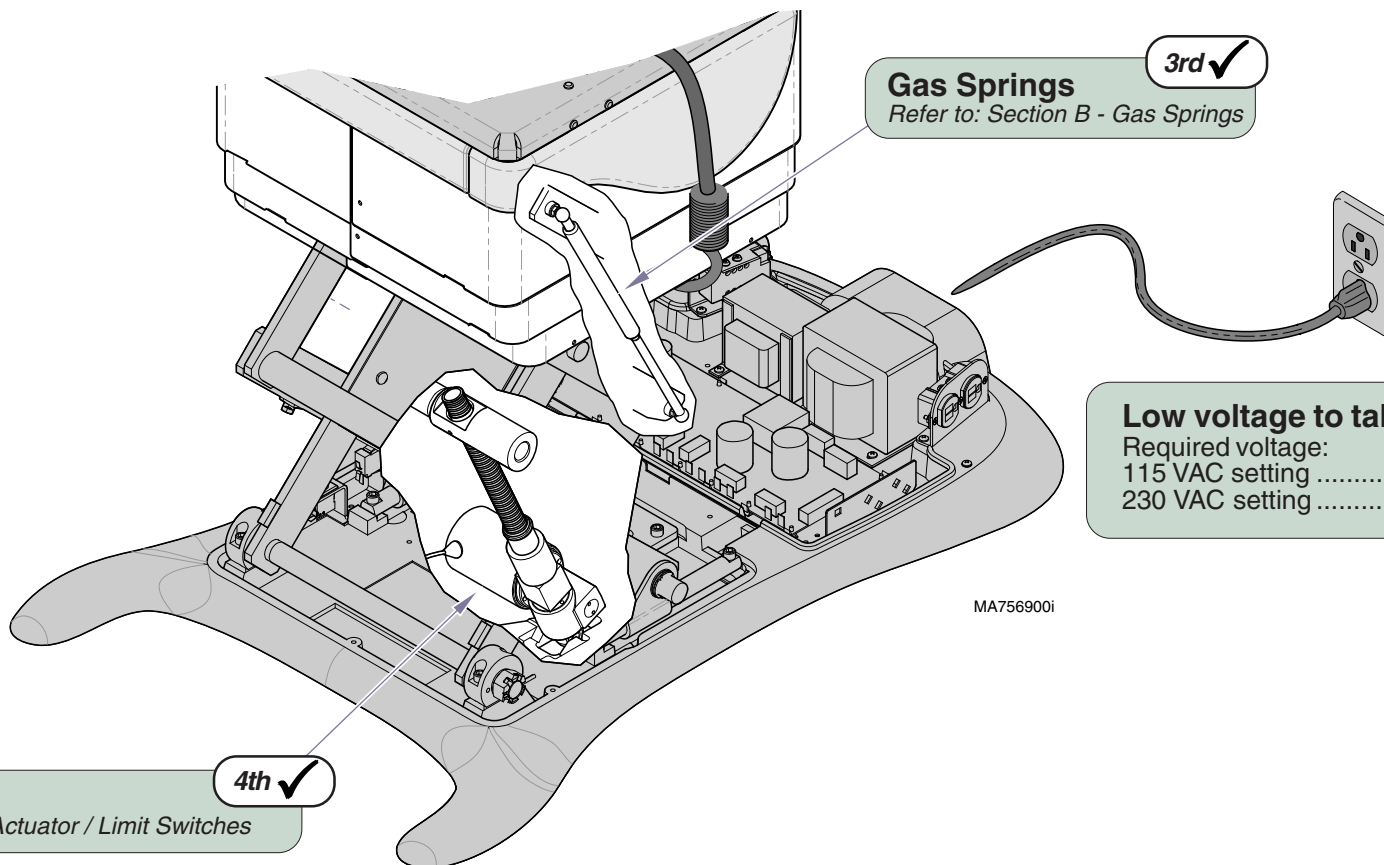
Refer to: Section B - Gas Springs

3rd ✓

Low voltage to table

Required voltage:
 115 VAC setting 115 ±10% VAC
 230 VAC setting 230 ±10% VAC

2nd ✓



MA756900i

Base Actuator

Refer to: Section B - Base Actuator / Limit Switches

4th ✓

Operation & Troubleshooting

Base Up / Down Function - continued

Problem: Base Up *and/or* Base Down moves briefly, then stops ("beeps").

Attention: Before performing any of the checks on this page, move the chair functions to the positions listed below:

Back / Foot: full UP
Tilt: full DOWN

If Base function becomes operable,
refer to: Section A - Crash Avoidance System

Go To Page:

Refer To:

Crash Avoidance System	A-38
Base Actuator / Limit Switches	B-6
Position Sensors	B-31
Main PC Board	B-37
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Loose / Damaged Wire Connections (Base Position Sensor, Hand/Foot Controls)

2nd ✓

Calibrate PC Board

Refer to: Section B - Main PC Board

1st ✓

Base Position Sensor

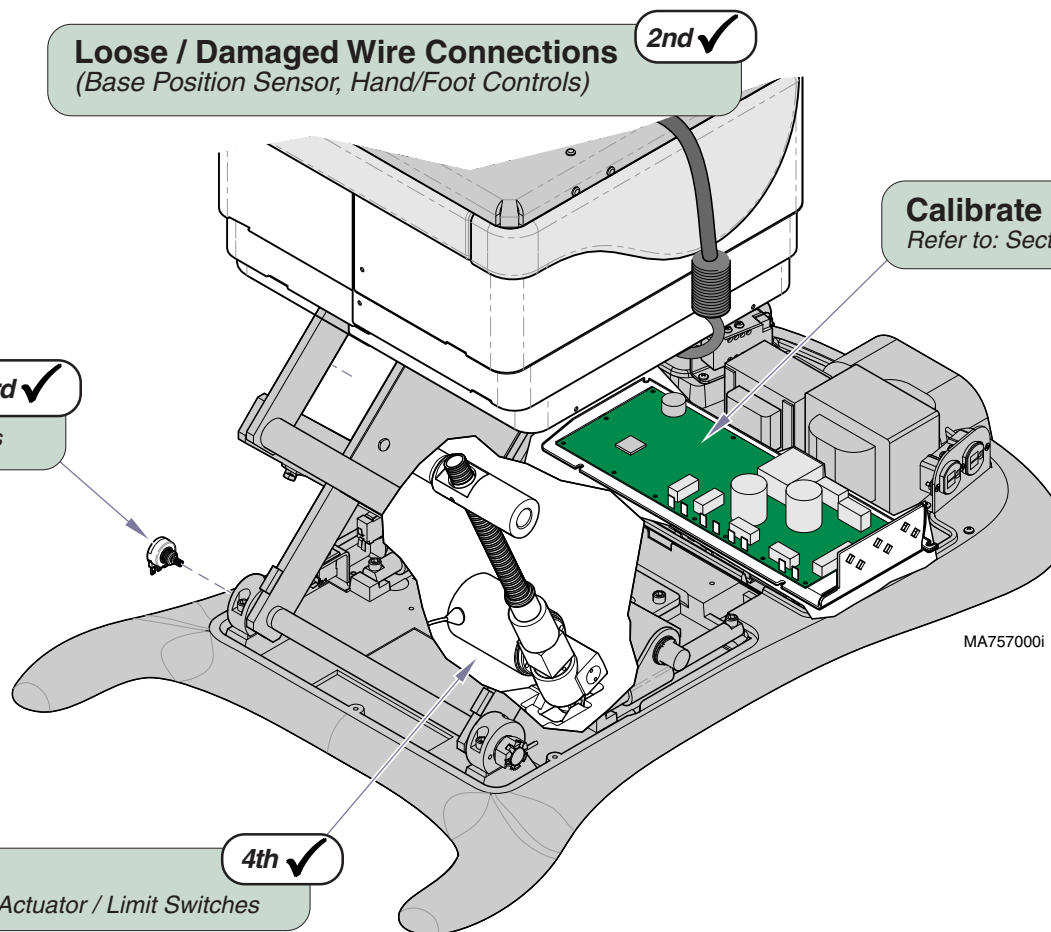
Refer to: Section B - Position Sensors

3rd ✓

Base Actuator

Refer to: Section B - Base Actuator / Limit Switches

4th ✓



MA757000i

Models:
Serial Numbers:

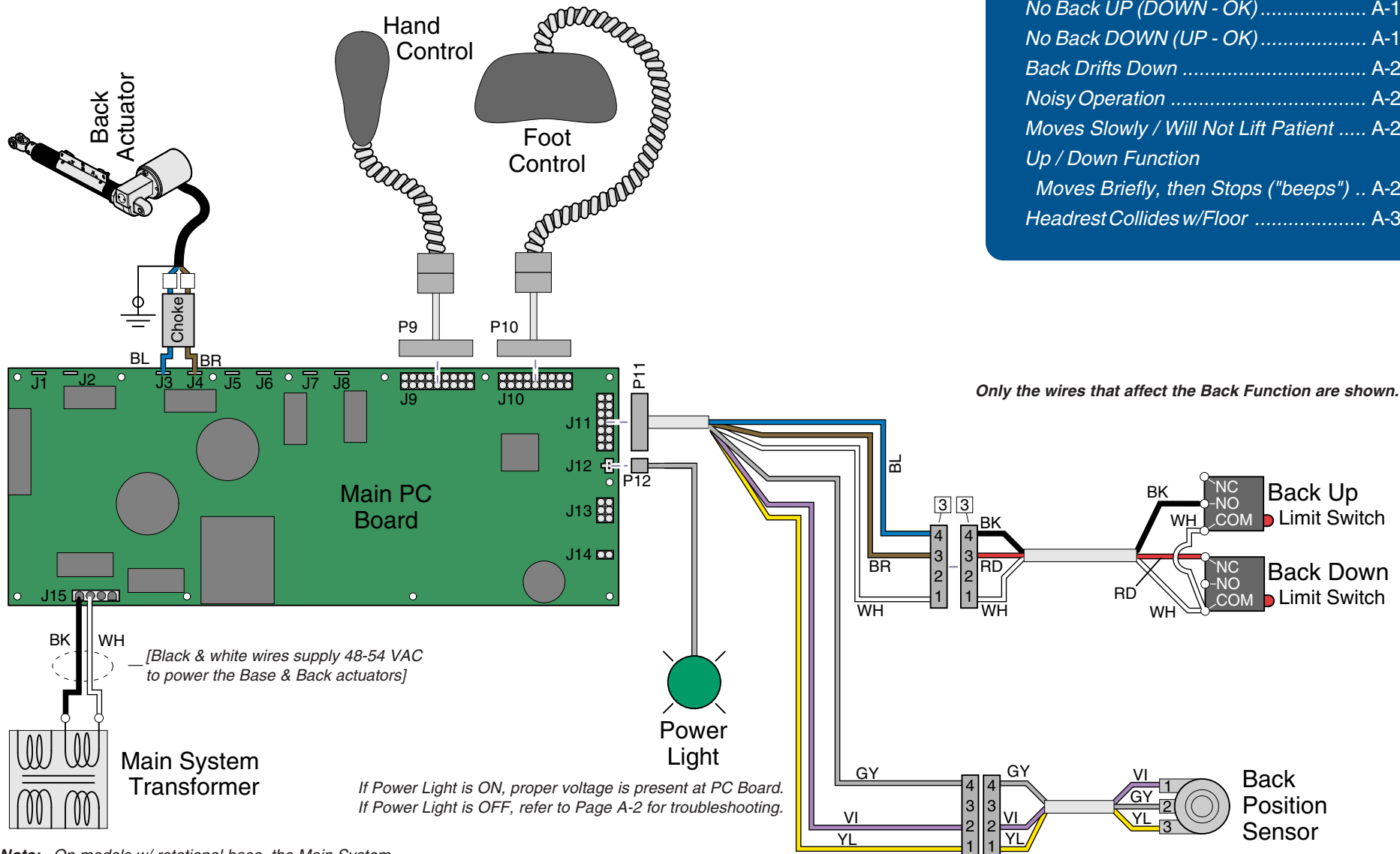
ALL

Base Up / Down

A-15

Back UP / DOWN Function

This illustration shows only the components that affect the Back UP / DOWN function.
Refer to the following page for a detailed description of Back UP / DOWN operation.



Troubleshooting [Back Up / Down Function]

[Go To Page:](#)

Problem	
No Back UP or DOWN	A-18
No Back UP (DOWN - OK)	A-19
No Back DOWN (UP - OK)	A-19
Back Drifts Down	A-20
Noisy Operation	A-20
Moves Slowly / Will Not Lift Patient	A-21
Up / Down Function	
Moves Briefly, then Stops ("beeps") ..	A-22
Headrest Collides w/Floor	A-38

Operation & Troubleshooting

Back UP / DOWN Function

Is There Power To The Table?

When voltage is present at the PC board, the power light is illuminated.

[Refer to 'Power To The Table' (page A-2), for description of current flow to the PC board].

Power To Foot / Hand Controls

Circuitry on the PC board supplies 8-10 VAC to the hand / foot control connection ports.

Back Up Operation

When the Back Up function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the back actuator motor.

The actuator motor runs and raises the back section.

NOTE

The PC board continuously monitors the Back Up limit switch and the Back position sensor.

If the Back Up limit switch is tripped (closed), the Back Up function will not operate.

If the Back position sensor detects that the back section has reached its upper limit, the Back Up function will not operate.

Actuator Motor runs until:

1. Hand / foot control button is released.
2. Back Up limit switch is tripped.
3. Emergency Stop button is pressed.
4. Position Sensor detects upper limit.
5. Overcurrent protection tripped.
6. Software time-out limit is reached (approx. 30 seconds).

Back Down Operation

When the Back Down function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 44 VDC to the back actuator motor.

The actuator motor runs and lowers the back section.

NOTE

The PC board continuously monitors the Back Down limit switch and the Back position sensor.

If the Back Down limit switch is tripped (open), the Back Down function will not operate.

If the Back position sensor detects that the table is in a potential "crash position", or that the back section has reached its lower limit, the Back Down function will not operate.*

Actuator Motor runs until:

1. Hand / foot control button is released.
2. Back Down limit switch is tripped.
3. Emergency Stop button is pressed.
4. Crash Avoidance System activated*.
5. Position Sensor detects lower limit.
6. Overcurrent protection tripped.
7. Software time-out limit is reached (approx. 30 seconds).

***Note:** Refer to *Section A: Crash Avoidance System* for a detailed description of "crash position", and the table functions that are disabled.

Operation & Troubleshooting

Refer To:

Hand & Foot Controls	B-3
Back Actuator / Limit Switches	B-10
Main PC Board	B-37
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Go To Page:

Back Up / Down Function - continued

Problem: No Back Up or Back Down.

Loose / Damaged Wire Connections

(Back Actuator, Back Up/Down Limit Switches, hand/foot control ports, black & white wires between main system transformer & PC board)

1st ✓

Back Actuator / Limit Switches

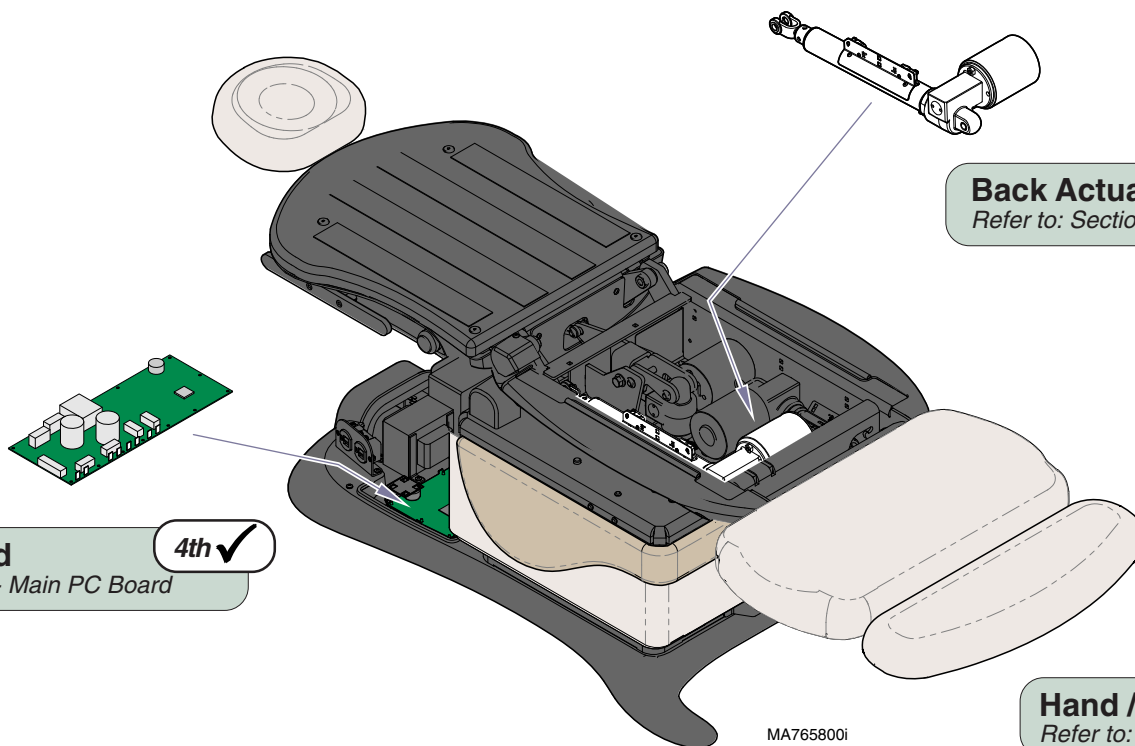
Refer to: Section B - Back Actuator / Limit Switches

3rd ✓

Main PC Board

Refer to: Section B - Main PC Board

4th ✓



Hand / Foot Control

Refer to: Section B - Hand & Foot Controls

2nd ✓



Operation & Troubleshooting

Back Up / Down Function - continued

Problem: No Back Up. [Back Down - OK]
-or
No Back Down. [Back Up - OK]

Attention: If Back Down is inoperable, move the other chair functions to the positions listed below:

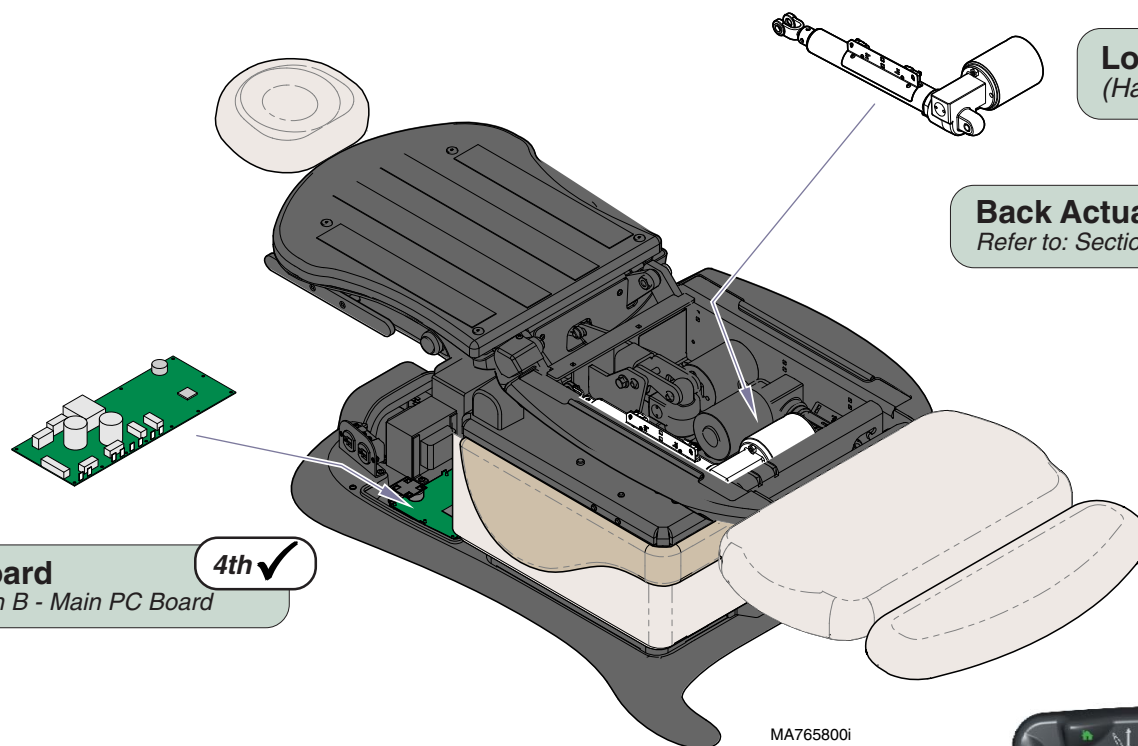
Base / Foot: full UP
Tilt: full DOWN

If Back Down function becomes operable,
refer to: Section A - Crash Avoidance System

Refer To:

Crash Avoidance System A-38
Hand & Foot Controls B-3
Back Actuator / Limit Switches B-10
Main PC Board B-37
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Go To Page:



Loose / Damaged Wire Connections 1st ✓
(Hand/Foot Control & Back Up / Down Limit Switches)

Back Actuator / Limit Switches 3rd ✓
Refer to: Section B - Back Actuator / Limit Switches

Main PC Board 4th ✓
Refer to: Section B - Main PC Board

Hand / Foot Control 2nd ✓
Refer to: Section B - Hand & Foot Controls



Models:
Serial Numbers:

ALL

Back Up / Down

A-19

Operation & Troubleshooting

Refer To:

Back Actuator / Limit Switches B-10

Wiring Diagrams D-1

Exploded Views / Part Numbers E-1

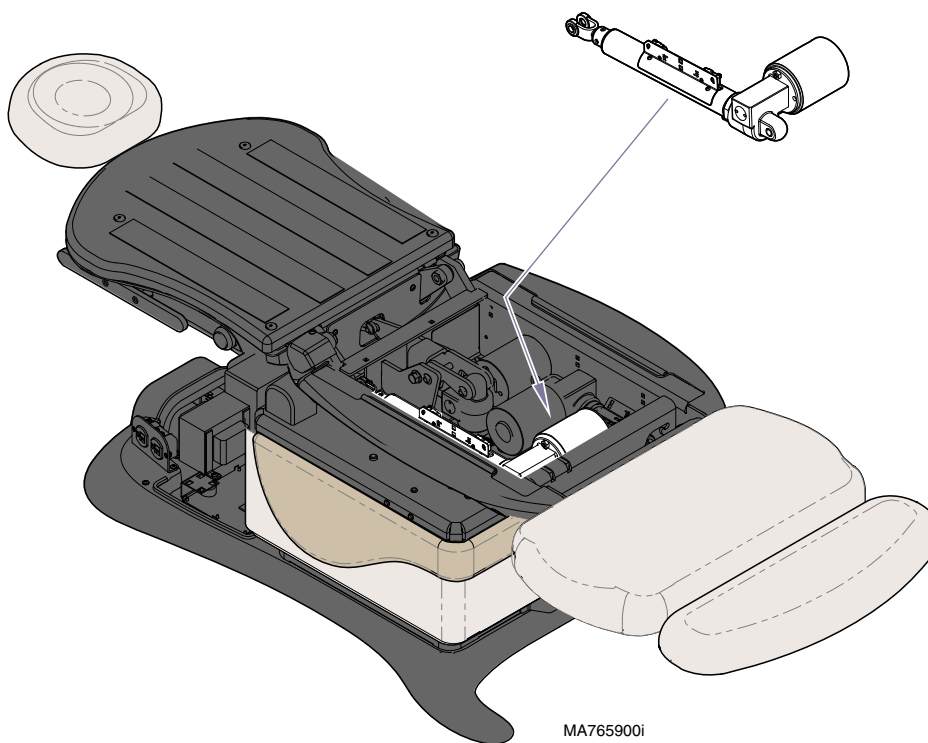
Go To Page:**Back Up / Down Function - continued**

Problem: Back drifts down.- and/or
Noisy operation. (Grinding / squeaking)

Back Actuator

Refer to: Section B - Back Actuator / Limit Switches

1st ✓



Operation & Troubleshooting

Back Up / Down Function - continued

Problem: Moves slowly - and/or
Will not lift patient.

Refer To:

General Information (*Specifications*) ii
Back Actuator / Limit Switches B-10
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Go To Page:

1st ✓ Did patient exceed 450 lb. weight limit?

Inform staff that max. patient weight is 450 lbs.

Refer to: General Information Section

2nd ✓

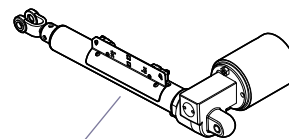
Low voltage to table

Required voltage:

115 VAC setting 115 $\pm$ 10% VAC

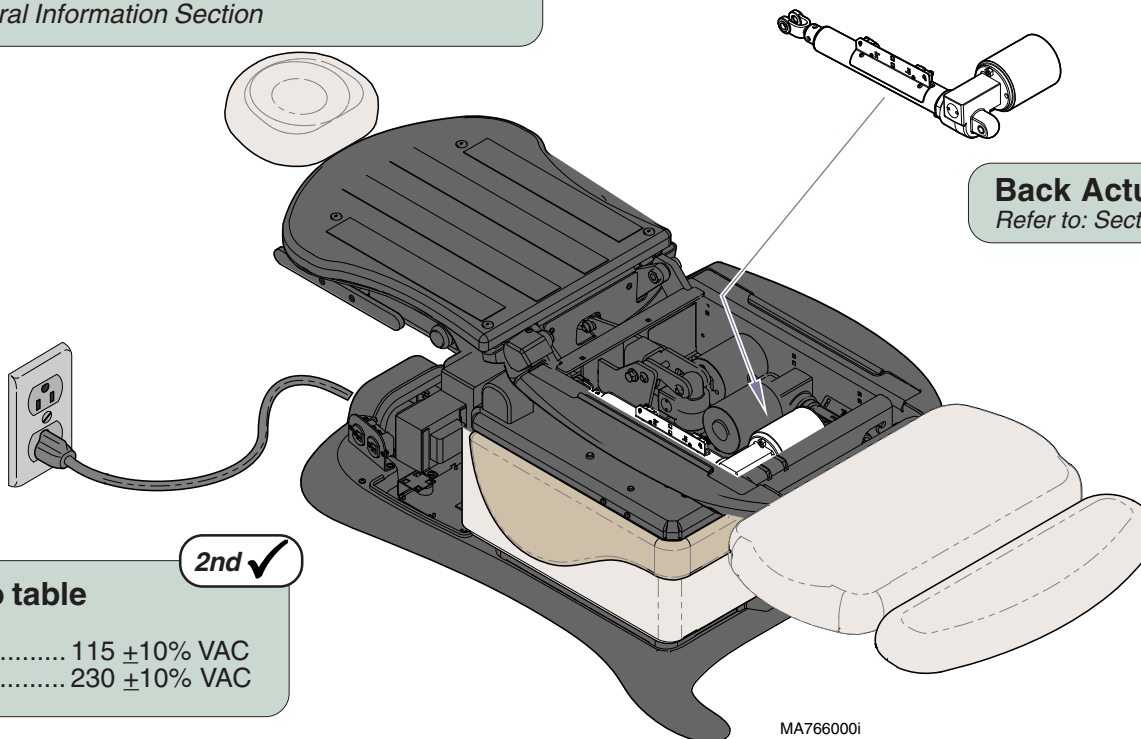
230 VAC setting 230 $\pm$ 10% VAC

1st ✓



3rd ✓ Back Actuator

Refer to: Section B - Back Actuator / Limit Switches



MA766000i

Models:
Serial Numbers:

ALL

Back Up / Down

Operation & Troubleshooting

Refer To:

Crash Avoidance System	A-38
Back Actuator / Limit Switches	B-10
Position Sensors	B-31
Main PC Board	B-37
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Go To Page:

Back Up / Down Function - continued

Problem: Back Up **and/or** Back Down moves briefly, then stops ("beeps").

Attention: Before performing any of the checks on this page, move the chair functions to the positions listed below:

Base / Foot: full UP
Tilt: full DOWN

If Tilt function becomes operable,
 refer to: Section A - Crash Avoidance System

Loose / Damaged Wire Connections
 (Back Position Sensor, Hand/Foot Controls)

2nd ✓

Calibrate PC Board

Refer to: Section B - Main PC Board

1st ✓

Back Actuator

Refer to: Section B - Back Actuator / Limit Switches

4th ✓

Back Position Sensor

Refer to: Section B - Position Sensors

3rd ✓

MA7661001

Back Up / Down

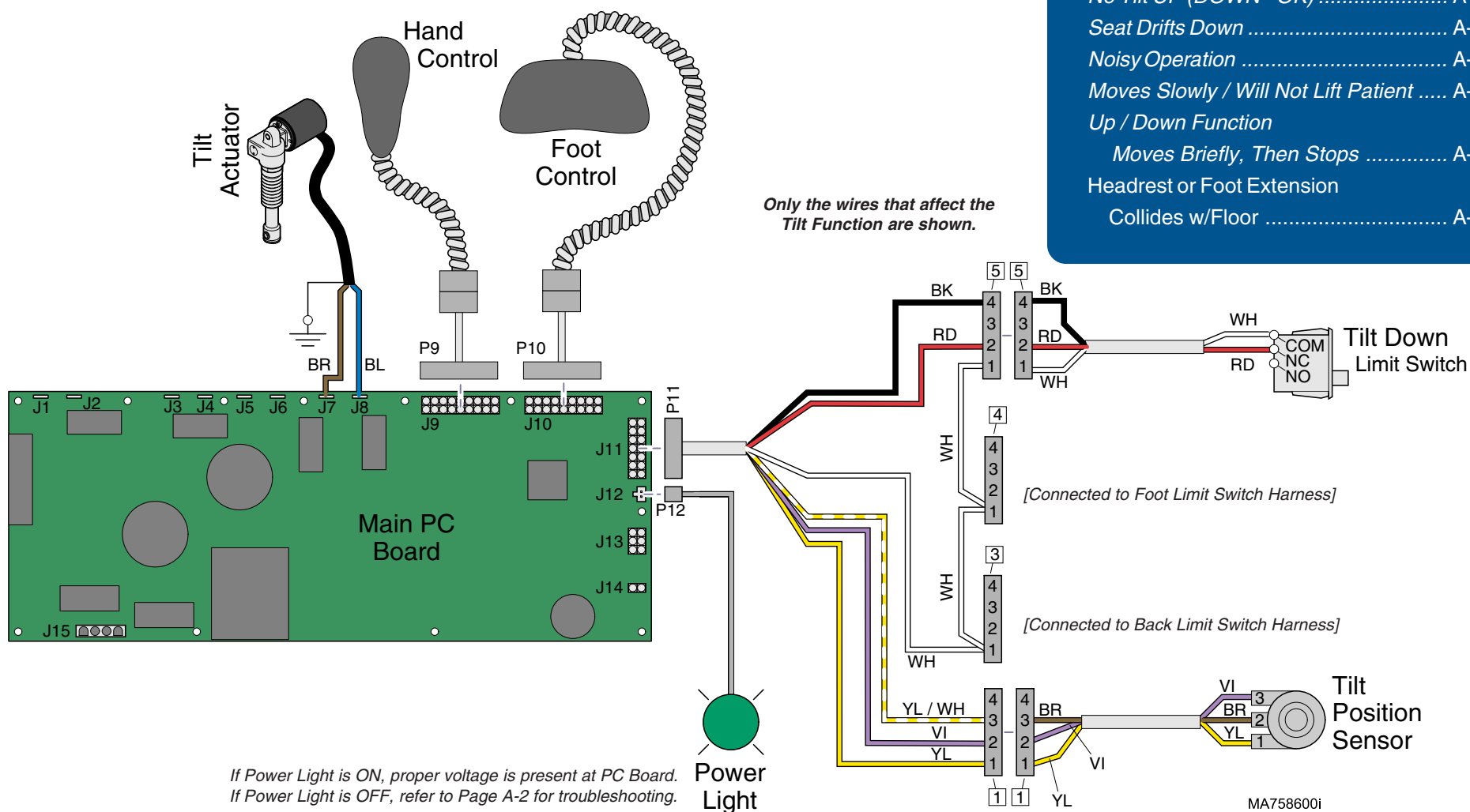
Models:
Serial Numbers:

ALL

Operation & Troubleshooting

Tilt UP / DOWN Function

This illustration shows only the components that affect the Tilt UP / DOWN function.
Refer to the following page for a detailed description of Tilt UP / DOWN operation.



Troubleshooting

[Tilt Up / Down Function]

Go To Page:

Problem

No Tilt UP or DOWN	A-25
No Tilt DOWN (UP - OK)	A-26
No Tilt UP (DOWN - OK)	A-26
Seat Drifts Down	A-27
Noisy Operation	A-27
Moves Slowly / Will Not Lift Patient	A-28
Up / Down Function	
Moves Briefly, Then Stops	A-29
Headrest or Foot Extension	
Collides w/Floor	A-38

Models:
Serial Numbers:

ALL

Tilt Up / Down

A-23

Operation & Troubleshooting

Tilt UP / DOWN Function

Is There Power To The Table?

When voltage is present at the PC board, the power light is illuminated.

[Refer to 'Power To The Table' (page A-2), for description of current flow to the PC board].

Power To Foot / Hand Controls

Circuitry on the PC board supplies 8-10 VAC to the hand / foot control connection ports.

Tilt Up Operation

When the Tilt Up function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the tilt actuator motor.

The actuator motor runs and reclines the seat section.

NOTE

The PC board continuously monitors the Tilt position sensor.

When the Tilt position sensor detects that the seat section has reached its upper limit, or that the table is in a potential "crash position", the Tilt Up function will not operate.*

Actuator Motor runs until:

1. Hand / foot control button is released.
2. Emergency Stop button is pressed.
3. Crash Avoidance System activated*.
4. Position Sensor malfunction.
5. Overcurrent protection tripped.
6. Software time-out limit is reached.
(approx. 30 seconds).

Tilt Down Operation

When the Tilt Down function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the tilt actuator motor.

The actuator motor runs and brings the seat section back to a flat position.

NOTE

The PC board continuously monitors the Tilt Down limit switch and the Tilt position sensor.

If the Tilt Down limit switch is tripped (open), the Tilt Down function will not operate.

If the Tilt position sensor detects that the table is in a potential "crash position", or that the seat section has reached its lower limit, the Tilt Down function will not operate.*

Actuator Motor runs until:

1. Hand / foot control button is released.
2. Tilt Down limit switch is tripped.
3. Emergency Stop button is pressed.
4. Crash Avoidance System activated*.
5. Position Sensor malfunction.
6. Overcurrent protection tripped.
7. Software time-out limit is reached
(approx. 30 seconds).

***Note:** Refer to *Section A: Crash Avoidance System* for a detailed description of "crash position", and the table functions that are disabled.

Operation & Troubleshooting

Tilt Up / Down Function - continued

Problem: No Tilt Up or Tilt Down.

Refer To:

Hand & Foot Controls B-3
 Tilt Actuator / Limit Switch B-14
 Main PC Board B-37
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

Go To Page:

Loose / Damaged Wire Connections
 (Tilt Actuator, hand/foot control ports)

1st ✓

Tilt Actuator

Refer to: Section B - Tilt Actuator / Limit Switch

3rd ✓

Main PC Board

Refer to: Section B - Main PC Board

4th ✓

Hand / Foot Control

Refer to: Section B - Hand & Foot Controls

2nd ✓

MA766200i



Models:
Serial Numbers:

ALL

Tilt Up / Down

A-25

Operation & Troubleshooting

Refer To:

Crash Avoidance System	A-38
Hand & Foot Controls	B-3
Tilt Actuator / Limit Switch	B-14
Main PC Board	B-37
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Go To Page:

Tilt Up / Down Function - continued

Problem: No Tilt Up. [Tilt Down - OK]
-or-
 No Tilt Down. [Tilt Up - OK]

Attention: Before performing any of the checks on this page, move the chair functions to the positions listed below:

Base / Back / Foot: full UP

If Tilt function becomes operable, refer to: Section A - Crash Avoidance System

Loose / Damaged Wire Connections
 (Tilt Down Limit Switch, & hand/foot control ports)

1st ✓

(No Tilt Down)
Tilt Down Limit Switch

Refer to: Section B - Tilt Actuator / Limit Switch

3rd ✓

Main PC Board

Refer to: Section B - Main PC Board

4th ✓

Hand / Foot Control

Refer to: Section B - Hand & Foot Controls

2nd ✓

(No Tilt Up)
Tilt Position Sensor

Refer to: Section B - Position Sensors

3rd ✓

MA766200i



Operation & Troubleshooting

Tilt Up / Down Function - continued

Problem: Seat drifts down.

-or

Noisy operation. (Grinding / squeaking)

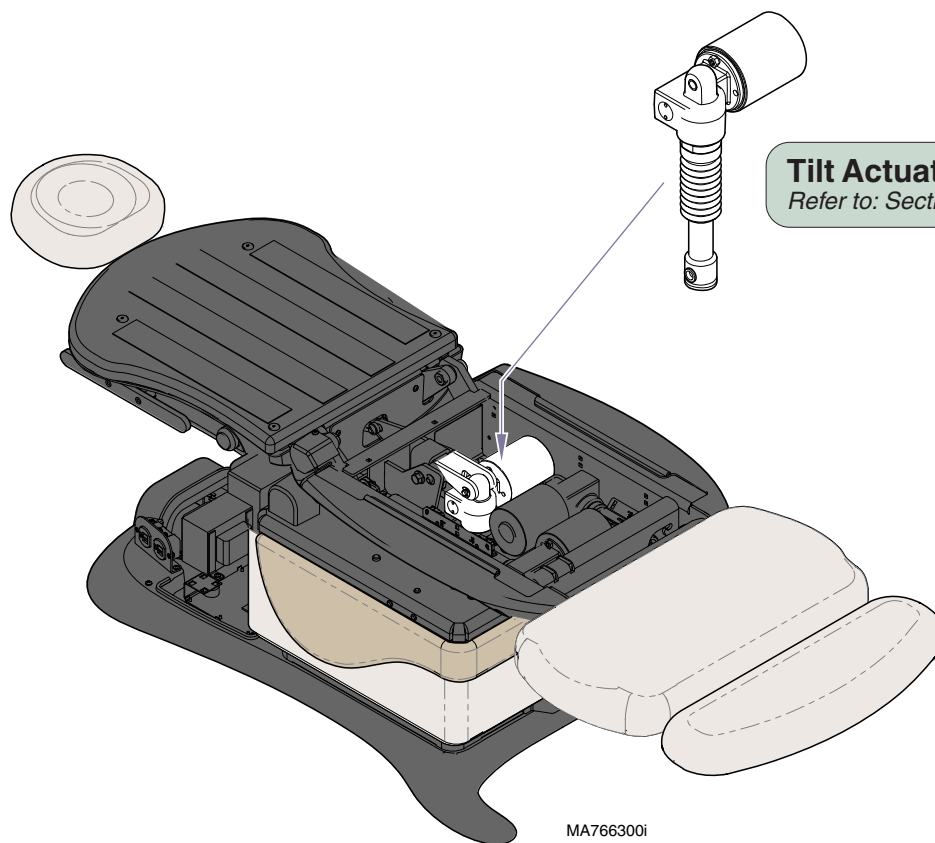
Refer To:

Tilt Actuator / Limit Switch B-14

Wiring Diagrams D-1

Exploded Views / Part Numbers E-1

Go To Page:



Tilt Actuator

Refer to: Section B - Tilt Actuator / Limit Switch

1st ✓

MA766300i

Models:
Serial Numbers:

ALL

Tilt Up / Down

A-27

Operation & Troubleshooting

Refer To:

General Information (*Specifications*) ii
 Tilt Actuator / Limit Switch B-14
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

Go To Page:

Tilt Up / Down Function - continued

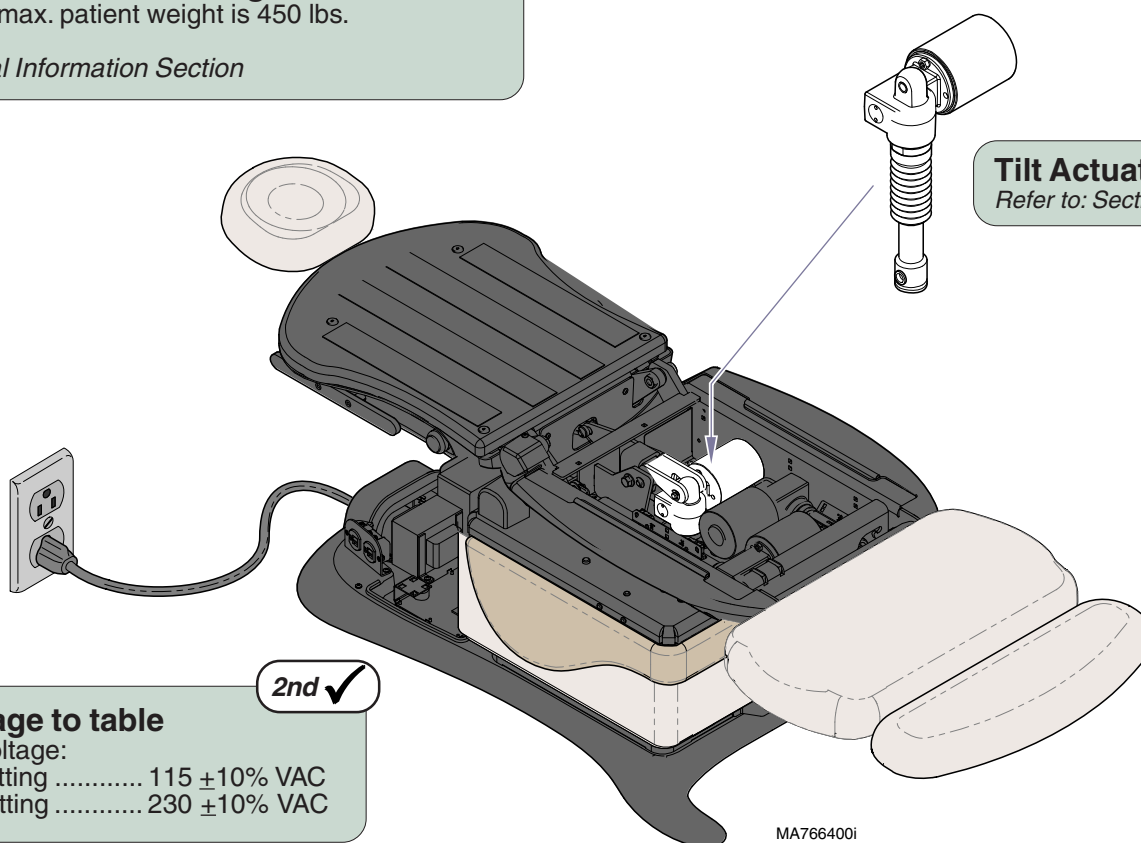
Problem: Moves slowly - *and/or*
 Will not lift patient.

Did patient exceed 450 lb. weight limit?

Inform staff that max. patient weight is 450 lbs.

Refer to: General Information Section

1st ✓



Tilt Actuator

Refer to: Section B - Tilt Actuator / Limit Switch

3rd ✓

Low voltage to table

Required voltage:

115 VAC setting 115 $\pm$ 10% VAC
 230 VAC setting 230 $\pm$ 10% VAC

2nd ✓

MA766400i

Operation & Troubleshooting

Tilt Up / Down Function - continued

Problem: Tilt Up *and/or* Tilt Down moves briefly, then stops ("beeps").

Attention: Before performing any of the checks on this page, move the chair functions to the positions listed below:

Base / Back / Foot: all the way up

If Tilt function becomes operable,
refer to: Section A - Crash Avoidance System

Go To Page:

Refer To:

Crash Avoidance System	A-38
Tilt Actuator / Limit Switch	B-14
Position Sensors	B-31
Main PC Board	B-37
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Tilt Actuator

Refer to: Section B - Tilt Actuator / Limit Switch

4th ✓

Calibrate PC Board

Refer to: Section B - Main PC Board

1st ✓

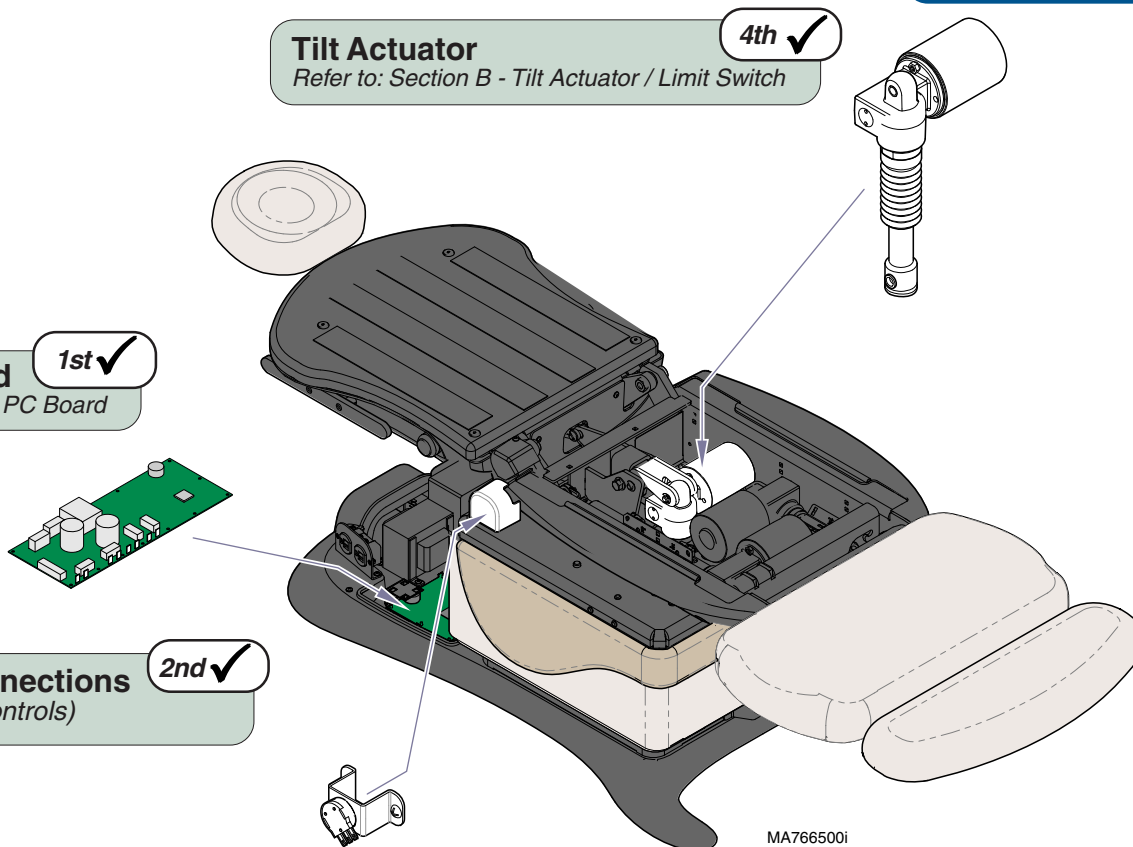
Loose / Damaged Wire Connections (Tilt Position Sensor, Hand/Foot Controls)

2nd ✓

Tilt Position Sensor

Refer to: Section B - Position Sensors

3rd ✓



Models:
Serial Numbers:

ALL

Tilt Up / Down

A-29

Operation & Troubleshooting

Foot UP / DOWN Function

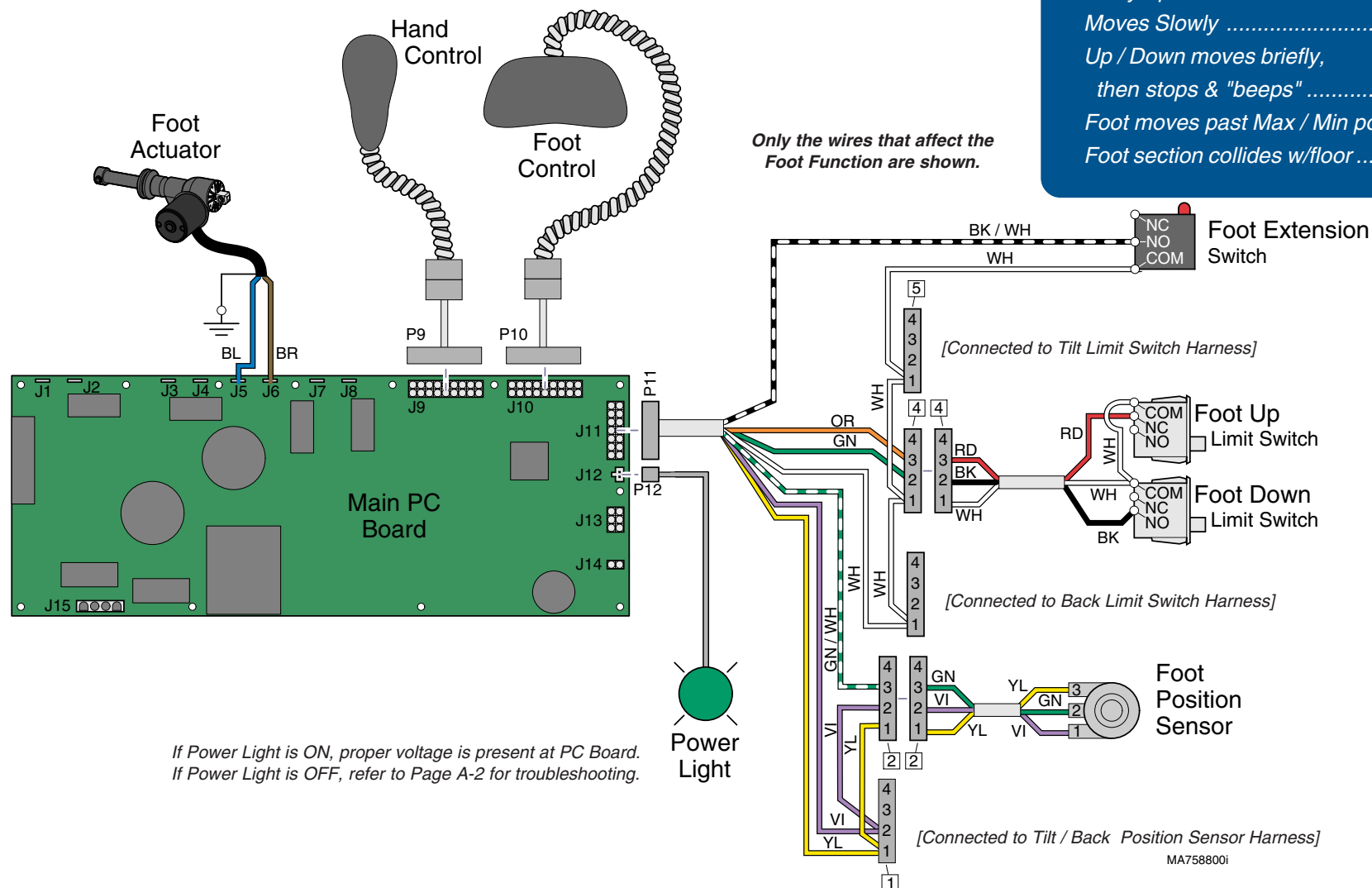
This illustration shows only the components that affect the Foot UP / DOWN function.
Refer to the following page for a detailed description of Foot UP / DOWN operation.

Troubleshooting [Foot Up / Down Function]

Problem

Go To Page:

No Foot UP or DOWN	A-32
No Foot UP (DOWN - OK)	A-33
No Foot DOWN (UP - OK) "beeps"	A-33
Foot Drifts Down	A-34
Noisy Operation	A-34
Moves Slowly	A-35
Up / Down moves briefly, then stops & "beeps"	A-36
Foot moves past Max / Min position	A-37
Foot section collides w/floor	A-38



Operation & Troubleshooting

Foot UP / DOWN Function

Is There Power To The Table?

When voltage is present at the PC board, the power light is illuminated.

[Refer to 'Power To The Table' (page A-2), for description of current flow to the PC board].

Power To Foot / Hand Controls

Circuitry on the PC board supplies 8-10 VAC to the hand / foot control connection ports.

Foot Up Operation

When the Foot Up function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the foot actuator motor.

The actuator motor runs and raises the foot section.

NOTE

The PC board continuously monitors the Foot Up Limit Switch and the Foot position sensor.

If the Foot Up Limit Switch is tripped (open), the Foot Up function will not operate.

If the Foot position sensor detects that the foot section has reached its upper limit, the Foot Up function will not operate.

Actuator Motor runs until:

1. Hand / foot control button is released.
2. Foot Up limit switch is tripped.
3. Emergency Stop button is pressed.
4. Position Sensor malfunction.
5. Overcurrent protection tripped.
6. Software time-out limit is reached.
(approx. 20 seconds).

***Note:** Refer to *Section A: Crash Avoidance System* for a detailed description of "crash position", and the table functions that are disabled.

Foot Down Operation

When the Foot Down function is activated, current flows thru the hand / foot control, back to the PC board. Circuitry on the PC Board supplies approximately 48 VDC to the foot actuator motor.

The actuator motor runs and lowers the foot section.

NOTE

The PC board continuously monitors the Foot Down limit switch, the Foot position sensor, and the Foot Extension switch.

If the Foot Down limit switch is tripped (closed), the Foot Down function will not operate.

If the Foot position sensor detects that the foot section has reached its lower limit, the Foot Down function will not operate.

If the Foot Extension switch is not tripped, and the Foot position sensor detects that the table is in a potential "crash position", the Foot Down function will not operate.*

Actuator Motor runs until:

1. Hand / foot control button is released.
2. Foot Down limit switch is tripped.
3. Emergency Stop button is pressed.
4. Crash Avoidance System activated*.
5. Position Sensor malfunction.
6. Overcurrent protection tripped.
7. Software time-out limit is reached
(approx. 20 seconds).

Operation & Troubleshooting

Refer To:

Hand & Foot Controls B-3
 Foot Actuator / Limit Switches B-19
 Main PC Board B-37
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

Go To Page:

Foot Up / Down Function - continued

Problem: No Foot Up or Foot Down.

Loose / Damaged Wire Connections

(Hand/Foot Control, Foot Actuator, & Foot Up/Down Limit Switches)

1st ✓

Foot Actuator

Refer to: Section B - Foot Actuator

3rd ✓

Main PC Board

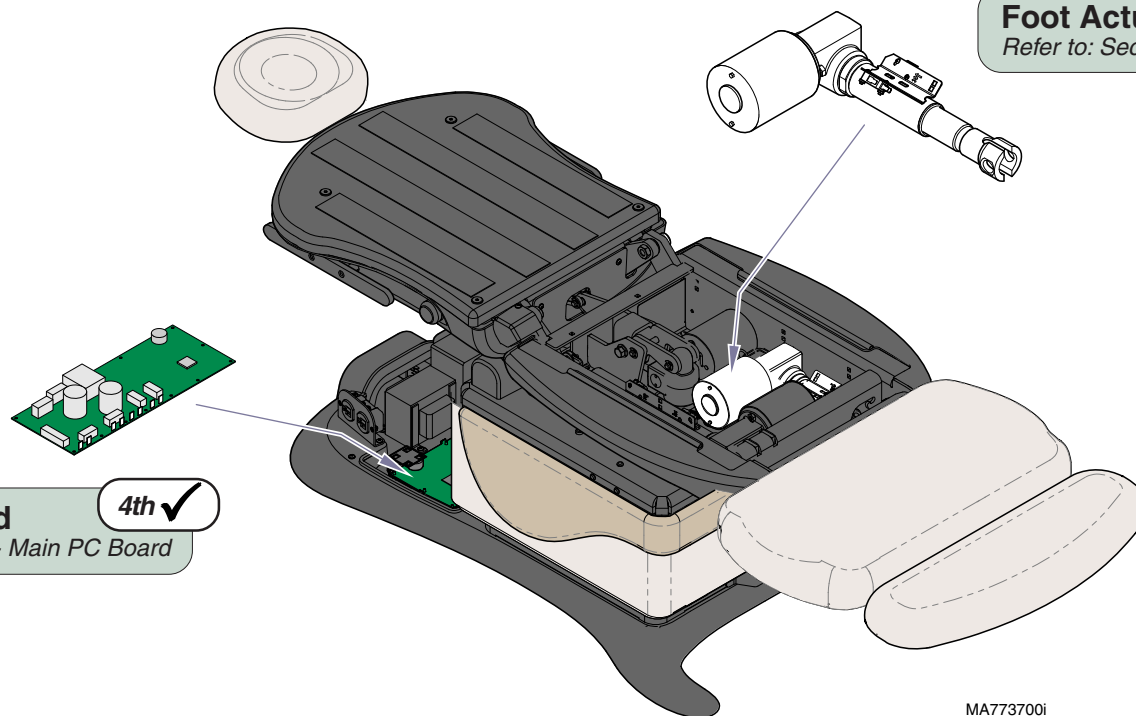
Refer to: Section B - Main PC Board

4th ✓

Hand / Foot Control

Refer to: Section B - Hand & Foot Controls

2nd ✓



MA773700i



Operation & Troubleshooting

Foot Up / Down Function - continued

Problem: No Foot Up. [Foot Down - OK]
-or-
 No Foot Down. [Foot Up - OK] "beeps"

Attention: If Foot Down is inoperable, move the foot extension to its stowed position, and move the other chair functions to the positions listed below:

Base / Back: full UP
Tilt: full DOWN

If Foot Down function becomes operable,
 refer to: Section A - Crash Avoidance System

Go To Page:

Refer To:

Crash Avoidance System A-38
 Foot Actuator / Limit Switches B-19
 Hand & Foot Controls B-3
 Main PC Board B-37
 Foot Extension / Limit Switch B-24
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

Loose / Damaged Wire Connections

Hand/Foot Control, Foot Up/Down Limit Switches,
 Foot Extension Limit Switch

1st ✓

Foot Actuator / Limit Switches

Refer to: Section B - Foot Actuator / Limit Switches

5th ✓

Switch affects DOWN function only Foot Extension Limit Switch

Refer to: Section B - Foot Extension / Limit Switch

2nd ✓

Main PC Board

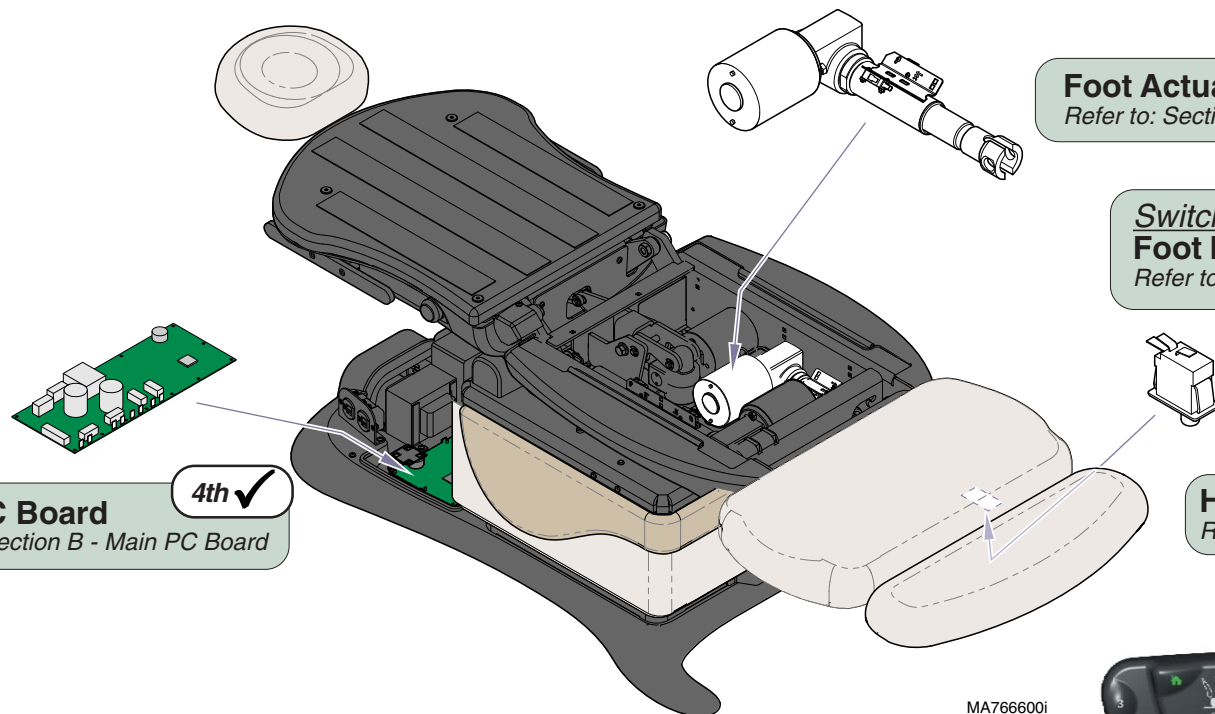
Refer to: Section B - Main PC Board

4th ✓

Hand / Foot Control

Refer to: Section B - Hand & Foot Controls

3rd ✓



MA766600i



Models:
Serial Numbers:

ALL

Foot Up / Down

A-33

Rev. 1/05

Operation & Troubleshooting

Refer To:

Foot Actuator / Limit Switches B-19
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

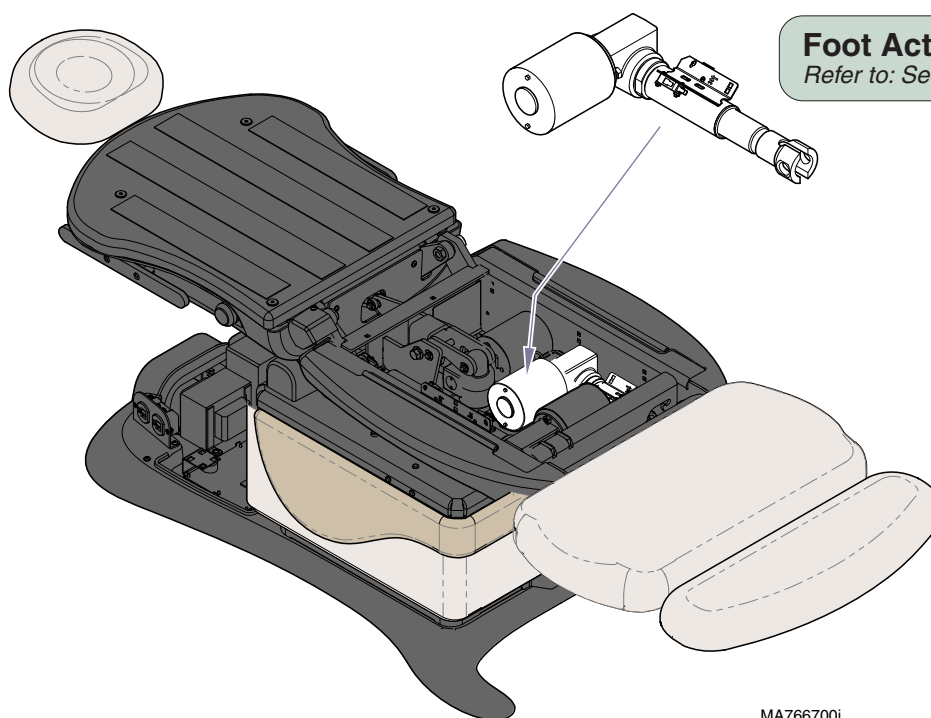
Go To Page:

Foot Up / Down Function - continued

Problem: Foot drifts down.

-or

Noisy operation. (Grinding, / squeaking)



Foot Actuator

Refer to: Section B - Foot Actuator

1st ✓

MA766700i

Operation & Troubleshooting

Foot Up / Down Function - continued

Problem: Moves slowly - *and/or*
Will not lift patient.

Refer To:

Go To Page:

General Information (*Specifications*) ii
Foot Actuator / Limit Switches B-19
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Did patient exceed 450 lb. weight limit?
Inform staff that max. patient weight is 450 lbs.

Refer to: General Information Section

1st ✓

Foot Actuator

Refer to: Section B - Foot Actuator

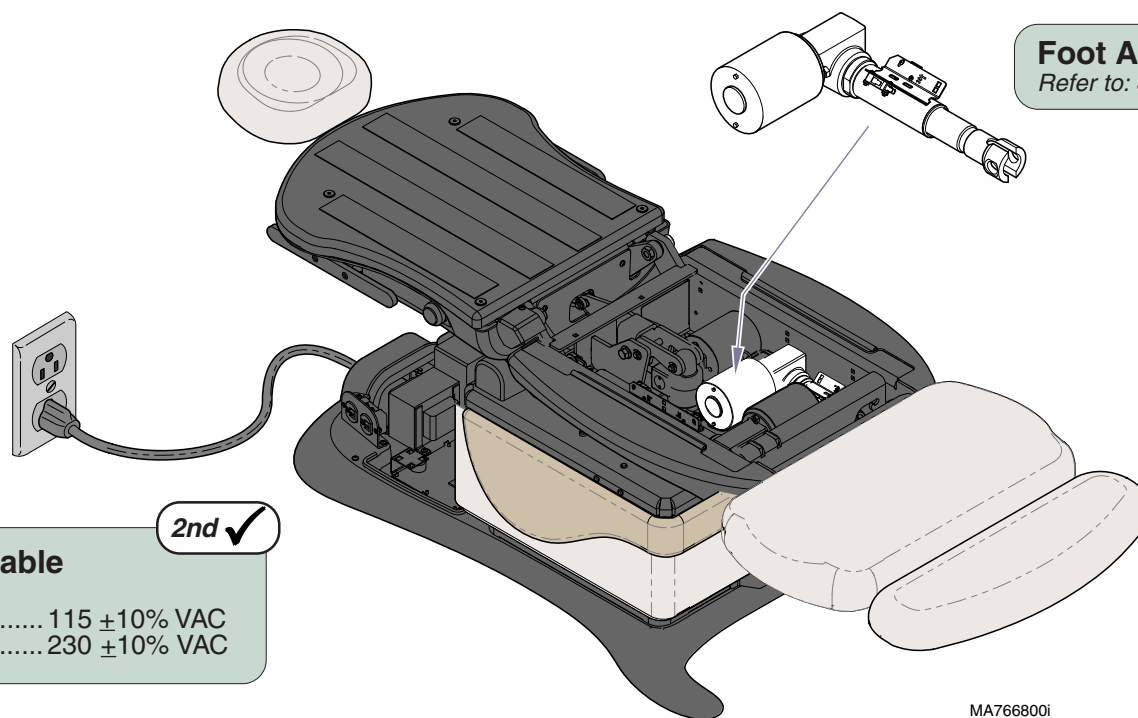
3rd ✓

Low voltage to table

Required voltage:

115 VAC setting 115 $\pm$ 10% VAC
230 VAC setting 230 $\pm$ 10% VAC

2nd ✓



Models:
Serial Numbers:

ALL

Foot Up / Down

A-35

Operation & Troubleshooting

Refer To:

Foot Actuator / Limit Switches B-19
 Position Sensors B-31
 Main PC Board B-37
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

Go To Page:

Foot Up / Down Function - continued

Problem: Foot Up *and/or* Foot Down moves briefly, then stops ("beeps").

Attention: If only the Foot Down function is inoperable, move the chair functions to the positions listed below:

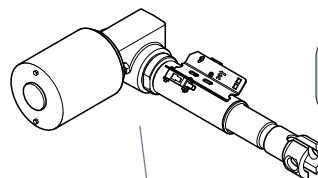
Base / Back: all the way up
Tilt: all the way down

If Foot Down function becomes operable, refer to: Section A - Crash Avoidance System

Loose / Damaged Wire Connections

(Foot Position Sensor, Hand/Foot Controls, Foot limit switches, Foot actuator)

2nd ✓



Foot Actuator

Refer to: Section B - Foot Actuator

4th ✓

Foot Position Sensor

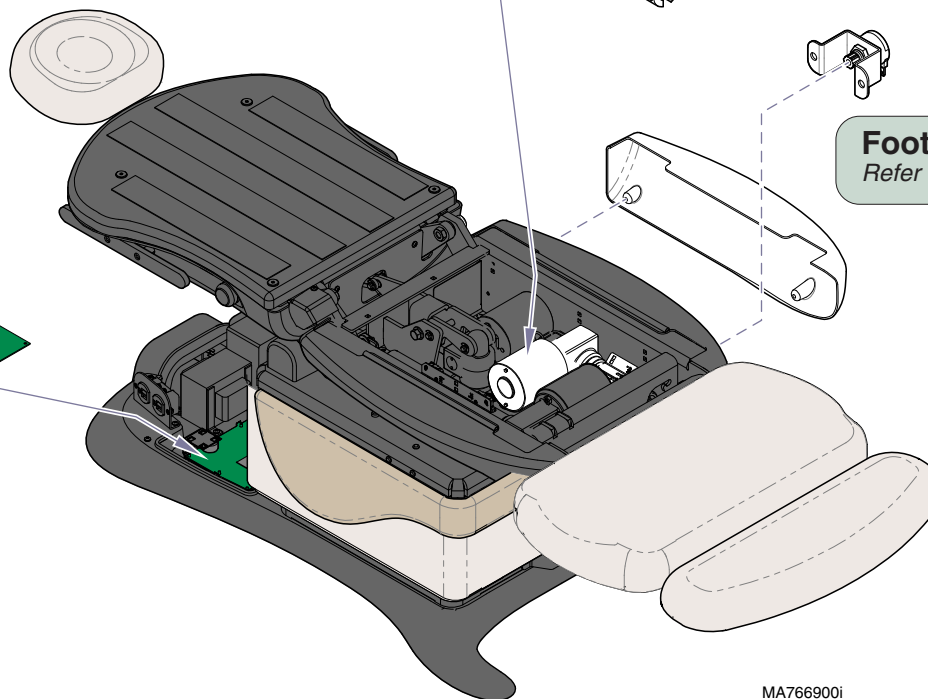
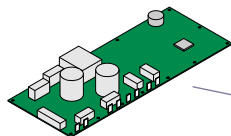
Refer to: Section B - Position Sensors

3rd ✓

Calibrate PC Board

Refer to: Section B - Main PC Board

1st ✓



MA766900i

Operation & Troubleshooting

Foot Up / Down Function - continued

Problem: Foot moves past Max. / Min. position.

Refer To:

Foot Actuator / Limit Switches B-19

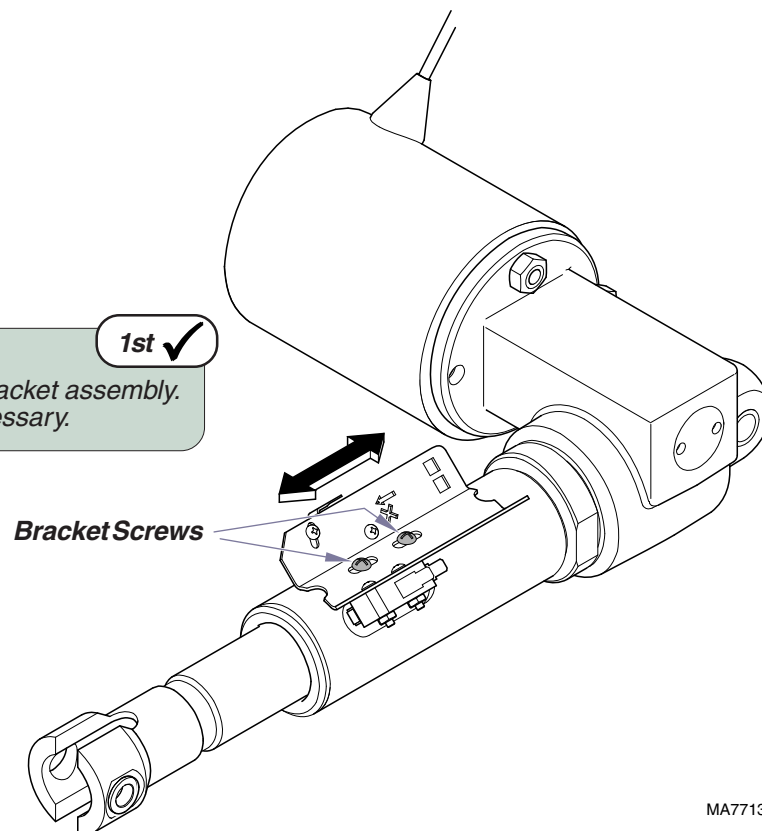
Exploded Views / Part Numbers E-1

Go To Page:

Adjust Foot Limit Switch Bracket

Loosen two bracket screws & reposition bracket assembly.
Check for proper operation. Repeat as necessary.

1st ✓



MA771300i

Models:
Serial Numbers:

Foot Up / Down

A-37

Operation & Troubleshooting

Crash Avoidance System

The Crash Avoidance System prevents damage to the chair by disabling certain functions if a potential crash position is detected.

This illustration shows only the components that are monitored by the Crash Avoidance System. Refer to the following page for a detailed description of "crash" position and how the system functions.

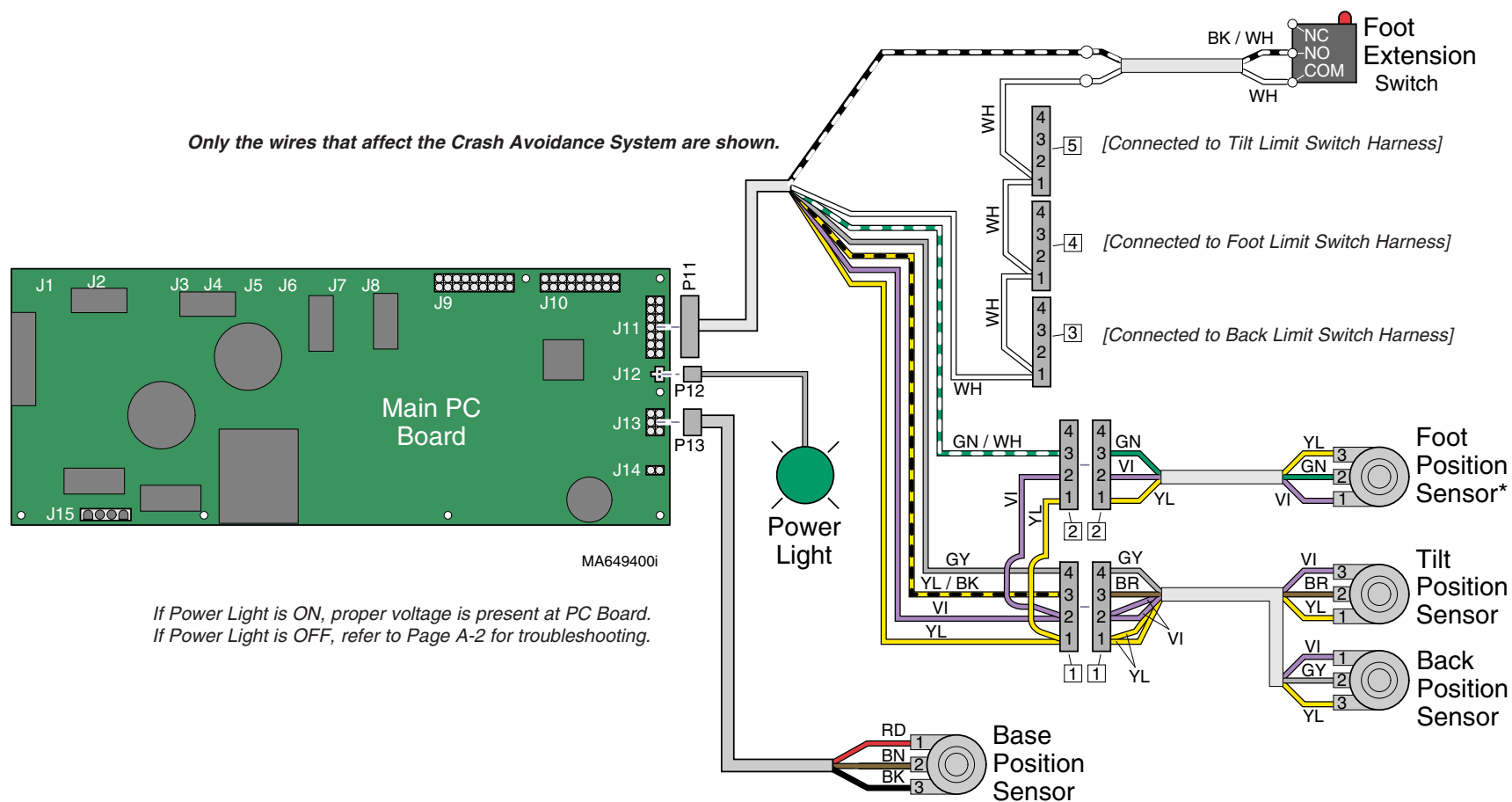
Troubleshooting [Crash Avoidance System]

Problem

One or more functions not working properly
(Chair not in Crash Position):

Go To Page:

Base Down, Back Down,
Tilt Up/Down, Foot Down A-40



Operation & Troubleshooting

Crash Avoidance System

When Are Functions Disabled?

The main PC board continuously monitors the all four position sensors, as well as the foot extension switch.

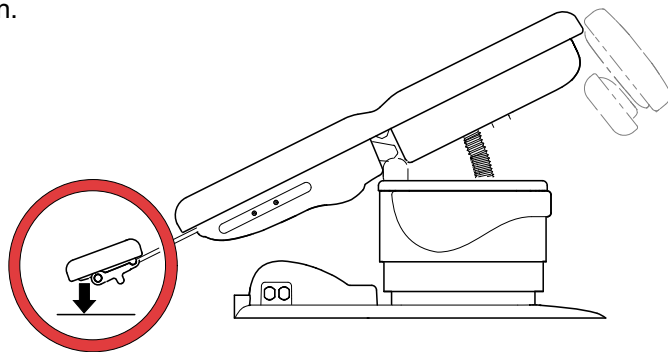
Based on the position sensor readings, and the status of the foot extension switch, circuitry on the PC Board estimates the position of the headrest and the foot extension.

If the estimated position of the headrest indicates a potential collision with the floor, the Base Down, Tilt Up, and/or Back Down function(s) are disabled.

If the estimated position of the foot extension indicates a potential collision with the floor or the chair shrouds, the Base Down, Tilt Down, and/or Foot Down function(s) are disabled.

When Are Functions Restored?

Functionality is restored when one or more of the axis are moved out of the potential crash position.



Crash Position A: Potential Headrest Collision

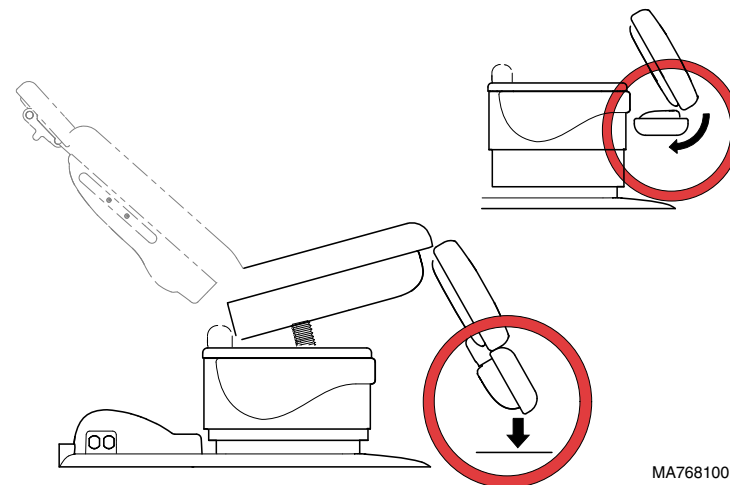
*One or more of the following functions may be disabled:
Base Down / Tilt Up / Back Down*

What Is Crash Position?

The chair is considered to be in a potential crash position when:

- The Base, Back, and Tilt position sensors indicate that the headrest mechanism is approximately 2 in. (5 cm) from the floor*.
- The Foot Extension switch is not tripped (*indicating the foot extension is not in the stowed position*), **and** the Base, Tilt, and Foot position sensors indicate that the foot extension cannot be moved to the stowed position without contacting the floor or chair shrouds.

* This measurement is an estimate based on "normal" headrest position (shown). The distance from the floor will vary with the headrest position.



MA768100i

Crash Position B: Potential Foot Extension Collision

*One or more of the following functions may be disabled:
Base Down / Tilt Down / Foot Down*

Operation & Troubleshooting

Refer To:

Position Sensors	B-31
Main PC Board	B-37
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Go To Page:

Crash Avoidance System - continued

Problem: One or more of the following functions not working properly.

- **Base Down**
- **Back Down**
- **Tilt Up/Down**
- **Foot Down**

(Chair is not in "Crash Position")

Attention: Before performing any of the checks on this page, move the foot extension to its stowed position.

Position Sensors [Base / Back / Tilt / Foot]

Refer to: Section B - Position Sensors

Note: One (or more) malfunctioning sensor may cause this problem to occur.

3rd ✓

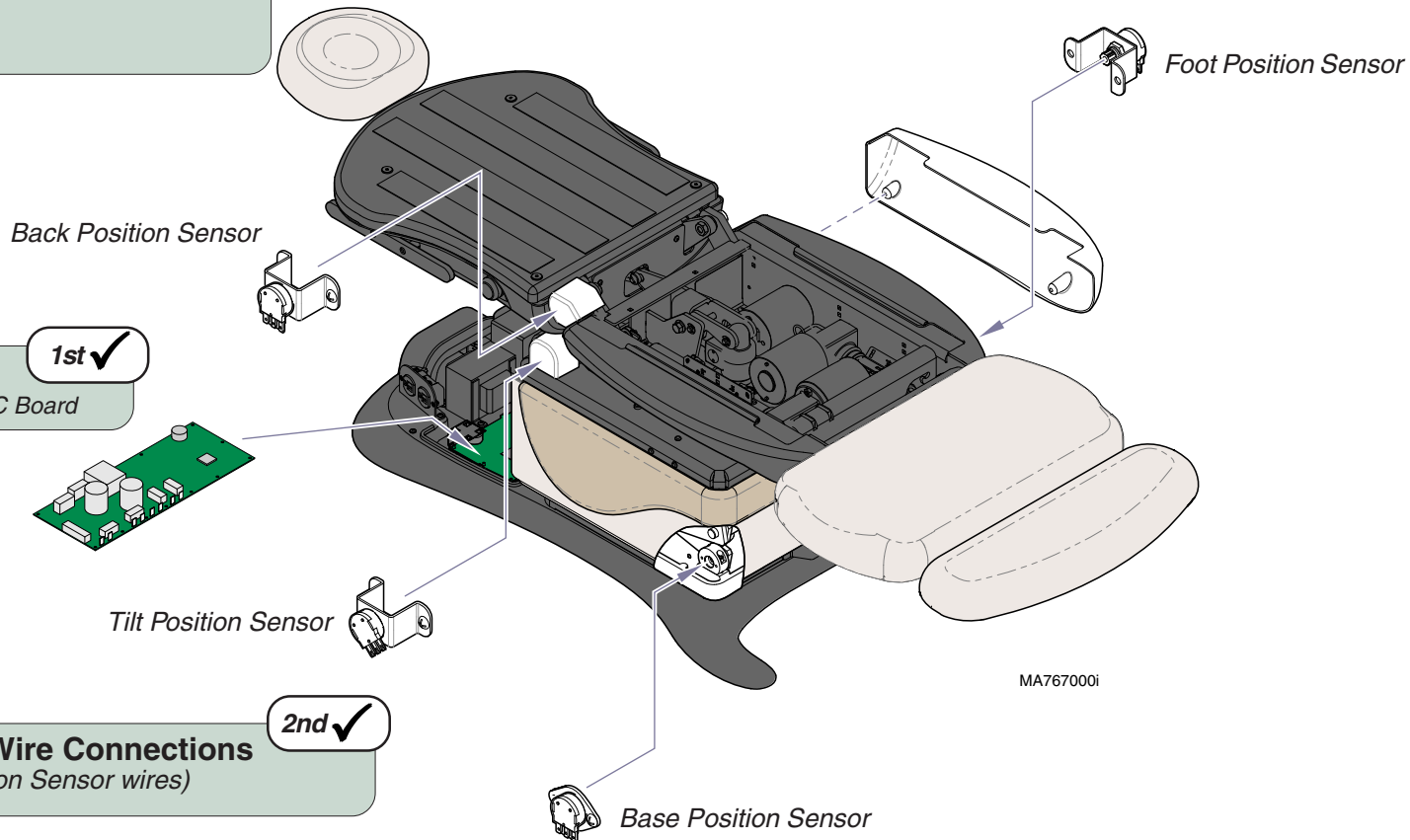
Calibrate PC Board

Refer to: Section B - Main PC Board

1st ✓

2nd ✓

Loose / Damaged Wire Connections
(Base / Tilt / Back Position Sensor wires)



Operation & Troubleshooting

Position Programming

The programming feature allows the user to store up to four frequently used table positions.

This illustration shows only the components that affect the position programming. Refer to the following page for a detailed description of this feature.

Troubleshooting [Position Programming]

Problem

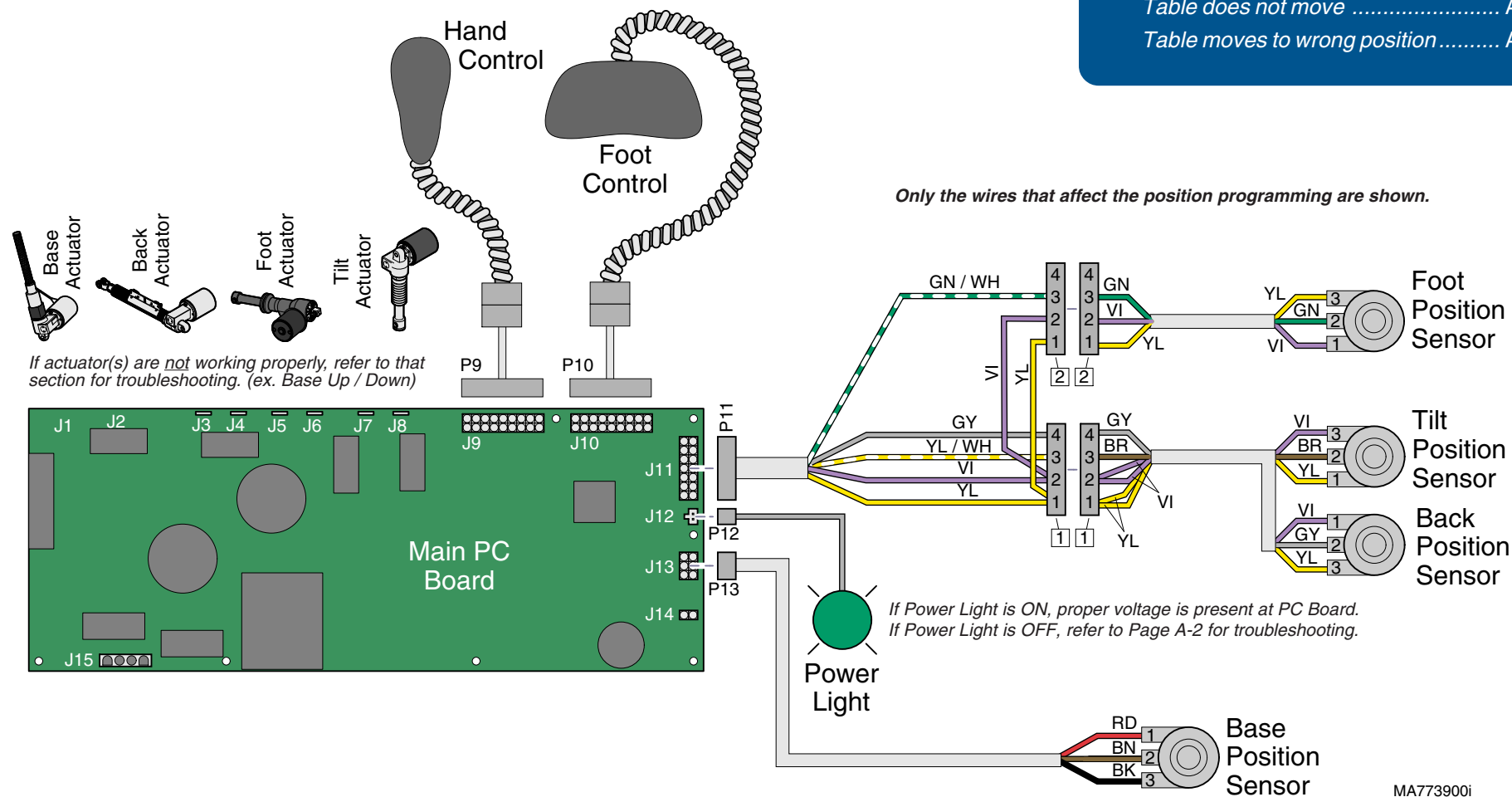
Go To Page:

Positions cannot be programmed A-43

When Position Button (1,2,3,4) is pressed:

Table does not move A-43

Table moves to wrong position A-43



Models: 641 (-003 & -005)
Serial Numbers: all

Position Programming

A-41

Operation & Troubleshooting

Position Programming

Programming a Table Position

The four position sensors continuously monitor the position of each axis (*Base, Back, Tilt, Foot*). This information is transmitted to the PC Board.

When a table position is properly programmed into the PC board's memory, the position of each axis is recorded based on the readings from the four sensors.

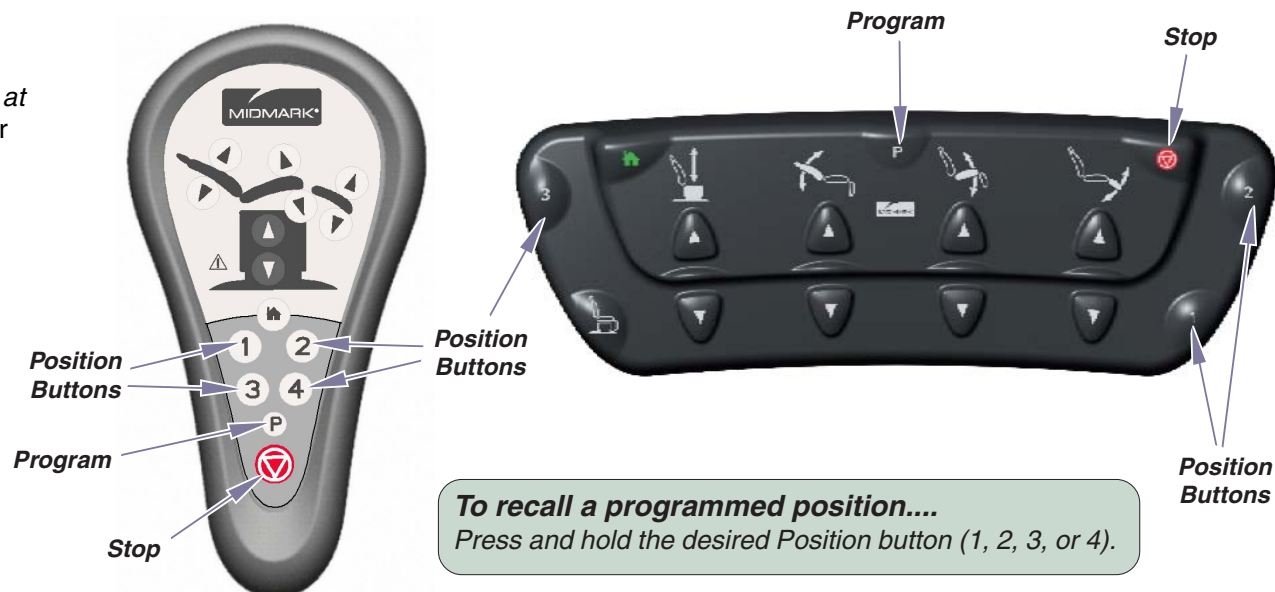
To program a table position....

- Move the table to desired position.
- Press the Program button. (you will hear a single "beep")
- Press the desired Position button (1, 2, 3, or 4). (three "beeps")

Tip: You must press the Position button within 5 seconds of pressing the Program button.

Recalling a Programmed Position

When a programmed position is recalled, the PC board activates the required functions (*all at the same time*) until the readings from the four position sensors match those of the recorded position.



To recall a programmed position....

Press and hold the desired Position button (1, 2, 3, or 4).

Operation & Troubleshooting

Position Programming - continued

Problem: Positions cannot be programmed. - **or**
When position button is pressed, table does not move,
or moves to wrong position.

[All manual functions - OK]

Note: If manual function(s) are not working properly, refer to that section for troubleshooting. (ex. Base Up / Down)

Refer To:

Hand & Foot Controls B-3
Main PC Board B-37
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Go To Page:

Reprogram the desired position. (see previous page)

Did you hear all of the "beeps" indicated in the programming procedure?

If NO, go to **2nd ✓**

If YES, go to **3rd ✓**

1st ✓

Hand / Foot Controls

Refer to: Section B - Hand & Foot Controls.

2nd ✓



Calibrate PC Board

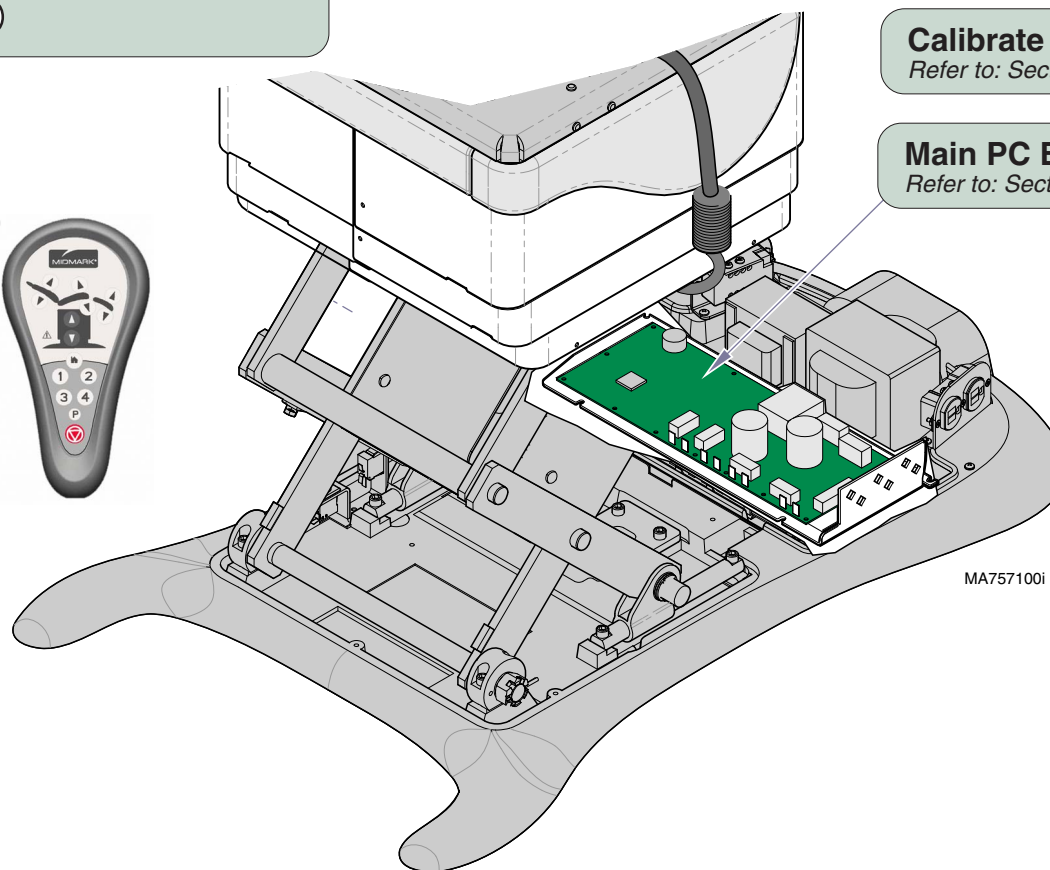
Refer to: Section B - Main PC Board

3rd ✓

Main PC Board

Refer to: Section B - Main PC Board

4th ✓



MA757100i

Models:
Serial Numbers:

641 (-003 & -005)
all

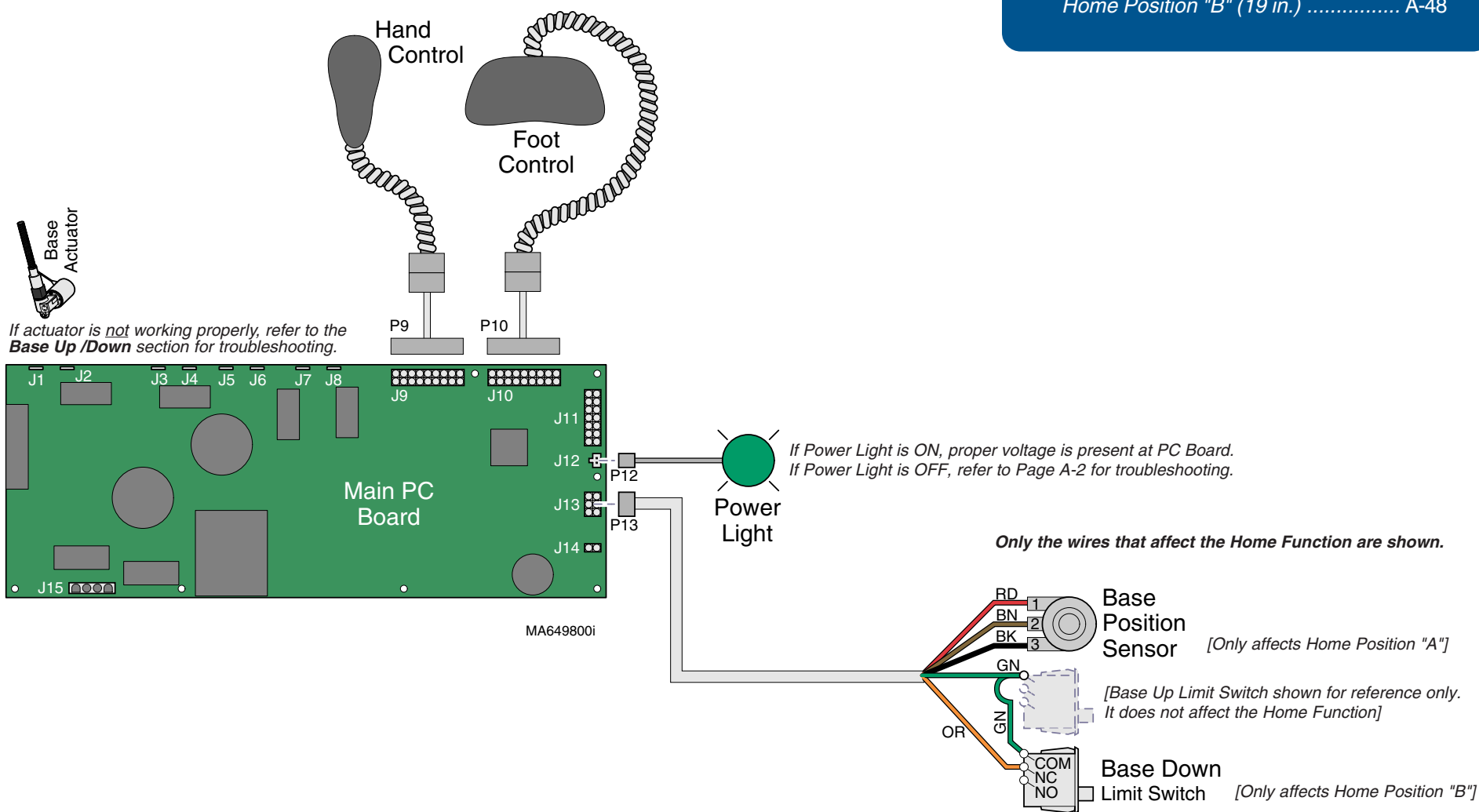
Position Programming

Operation & Troubleshooting

"Home" Function

The Home function automatically lowers the table base to **Home Position "A"** [23 in. (58.4 cm)] or **Home Position "B"** [19 in. (48.2 cm)].

This illustration shows only the components that affect the Home Function. Refer to the following page for a detailed description of this feature.



Troubleshooting ["Home" Function]

Problem

[Go To Page:](#)

When Home button is pressed, nothing happens	A-46
Table does not stop at correct height: Home Position "A" (23 in.)	A-47
Home Position "B" (19 in.)	A-48

Operation & Troubleshooting

"Home" Function

Home Position "A" [23 in. (58.4 cm)]

When the Home button is pressed then immediately released, the Base Down function is activated.

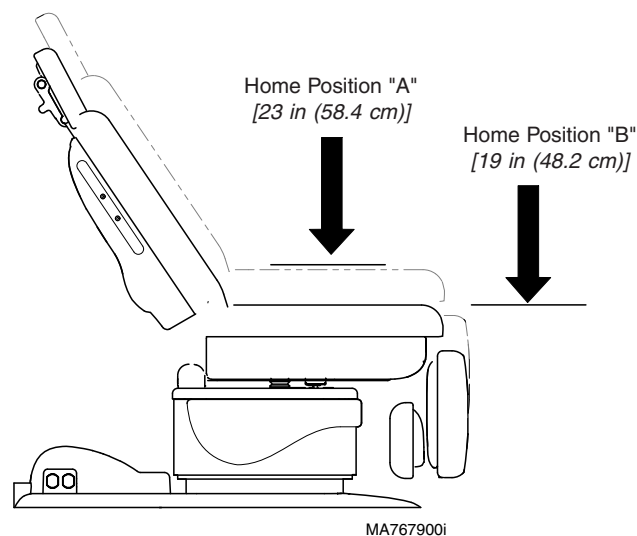
When the Base Position Sensor indicates that table has reached 23 in., the PC Board stops the table.

Home Position "B" [19 in. (48.2 cm)]

When the Home button is pressed and held for approximately 2 seconds a short "beep" is emitted, and the Base Down function is activated.

The table stops when the Base Down Limit Switch is tripped at approx. 19 in.

To go to Home Position "A" [23 in. (58.4 cm)]....
Press, then immediately release the Home button.



To go to Home Position "B" [19 in. (48.2 cm)]...
Press and hold the Home button until you hear a single "beep"
(approx. 2 seconds).

Operation & Troubleshooting

Refer To:

Hand & Foot Controls B-3
 Main PC Board B-37
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

Go To Page:

"Home" Function - continued

Problem: When Home button is pressed, nothing happens.

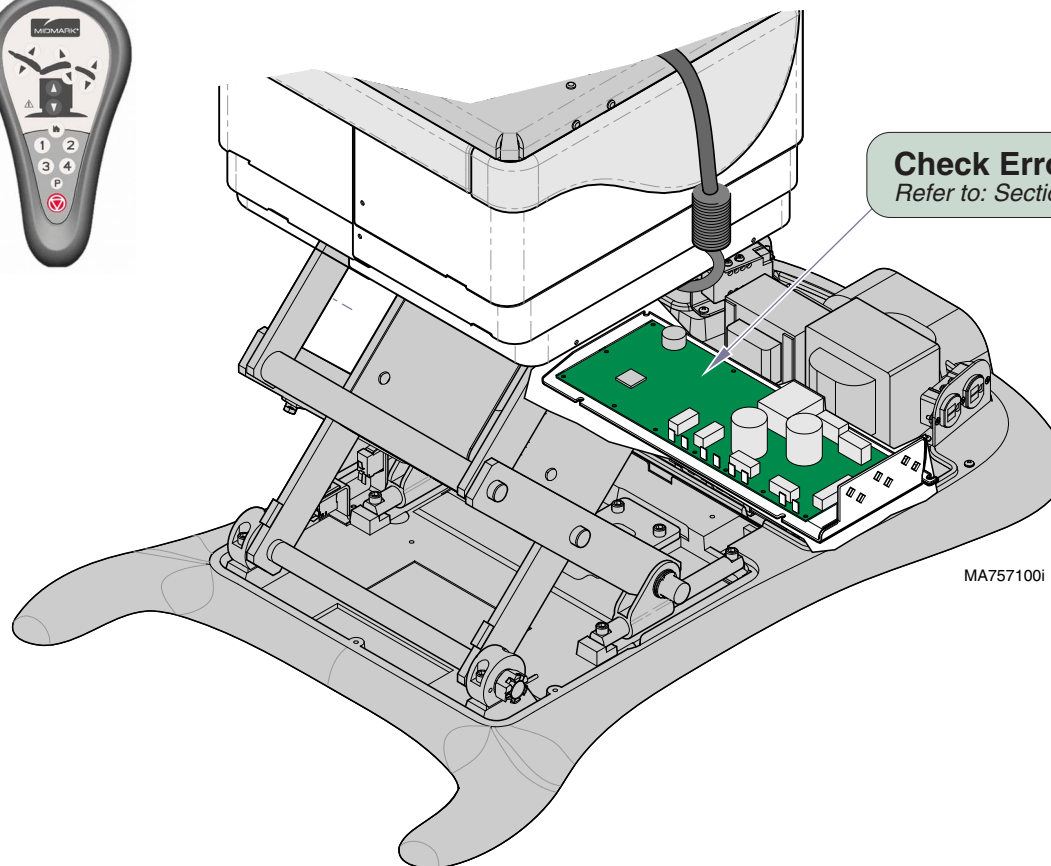
[All manual functions - OK]

Note: If manual function(s) are not working properly, refer to that section for troubleshooting.
 (ex. Base Up / Down)

Hand / Foot Controls

Refer to: Section B - Hand & Foot Controls.

1st ✓



Check Error Code(s)

Refer to: Section B - Main PC Board

2nd ✓

MA757100i

Operation & Troubleshooting

"Home" Function - continued

Problem: Home position "A" does not stop at 23 in. (58 cm).
Home position "B" - OK.

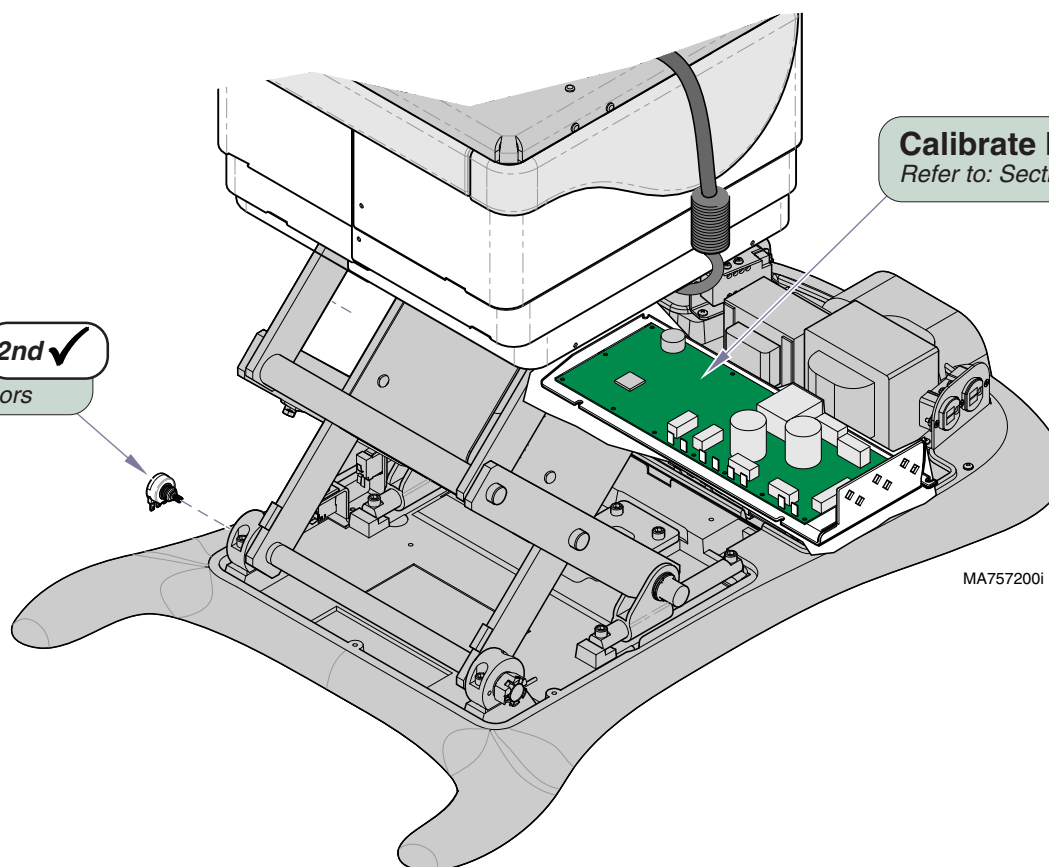
[All manual functions - OK]

Note: If manual function(s) are not working properly,
refer to that section for troubleshooting.
(ex. Base Up / Down)

Refer To:

Position Sensors B-31
Main PC Board B-37
Wiring Diagrams D-1
Exploded Views / Part Numbers E-1

Go To Page:



Base Position Sensor

Refer to: Section B - Position Sensors

2nd ✓

Calibrate Main PC Board

Refer to: Section B - Main PC Board

1st ✓

MA757200i

Models:
Serial Numbers:

ALL

"Home" Function

A-47

Operation & Troubleshooting

Refer To:

Base Actuator / Limit Switches B-6
 Wiring Diagrams D-1
 Exploded Views / Part Numbers E-1

Go To Page:

"Home" Function - continued

Problem: Home position "B" does not stop at 19 in. (48 cm).
 Home position "A" - OK.

[All manual functions - OK]

Note: If manual function(s) are not working properly,
 refer to that section for troubleshooting.
 (ex. Base Up / Down)

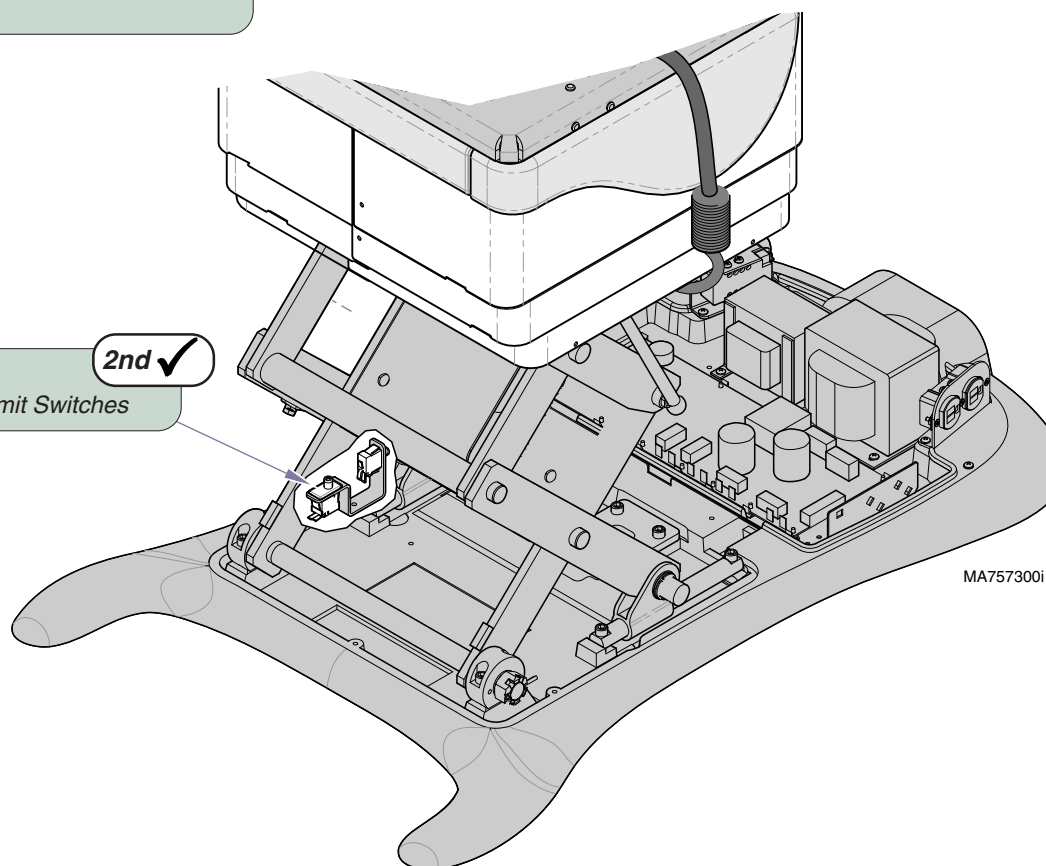
Loose / Damaged Wire Connections
 (Base Down Limit Switch)

1st ✓

Base Down Limit Switch

Refer to: Section B - Base Actuator / Limit Switches

2nd ✓



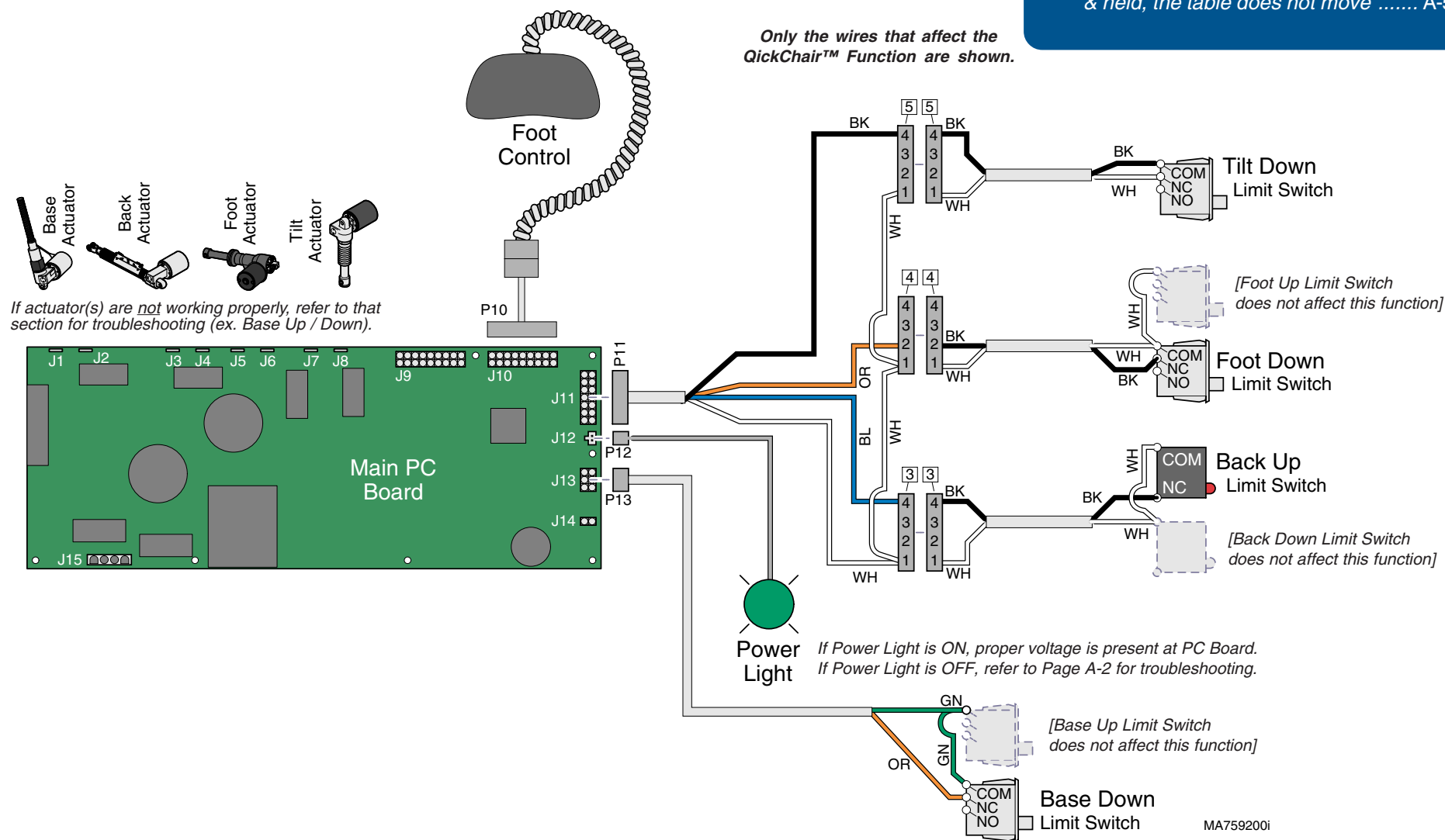
MA757300i

Operation & Troubleshooting

QuickChair™ Function (w/ Foot Control Only)

This function activates the *Base Down*, *Tilt Down*, *Foot Down*, and *Back Up* functions at the same time to move the table into "chair position".

This illustration shows only the components that affect the QuickChair™ Function. Refer to the following page for a detailed description of this feature.



Troubleshooting [QuickChair™ Function]

Problem

When QuickChair button is pressed & held, the table does not move A-51

Go To Page:

Models:
Serial Numbers:

ALL

QuickChair™
Function

A-49

Operation & Troubleshooting

QuickChair™ Function

What is "Chair Position"?

Base: *all the way down*

Back: *all the way up*

Tilt: *all the way down*

Foot: *all the way down*

How it works...

When the QuickChair™ button is pressed and held, the PC Board activates all of the following functions:

Function

Base Down

Back Up

Tilt Down

Foot Down

Runs until...

Base Down limit switch is tripped

Back Up limit switch is tripped

Tilt Down limit switch is tripped

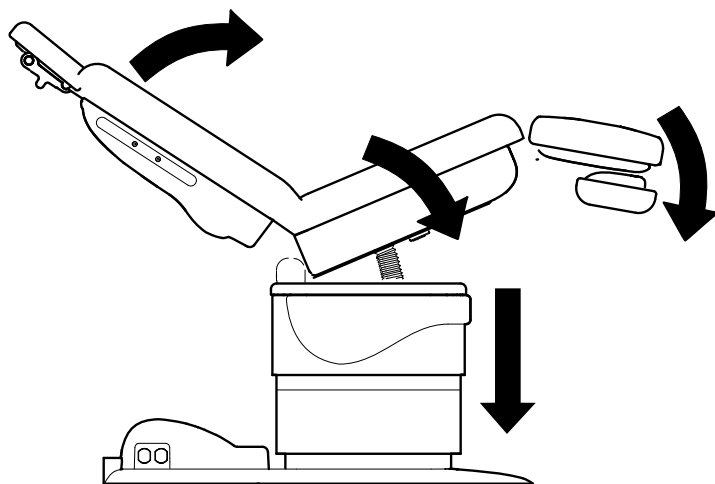
Foot Down limit switch is tripped

To activate the QuickChair™ function....

Press and hold the Chair Position button.



**QuickChair™
Button**



MA768000i

**QuickChair™
Function**

Models:
Serial Numbers:

ALL

Operation & Troubleshooting

QuickChair™ Function - continued

Problem: When QuickChair™ button is pressed & held, the table does not move.

[All manual functions - OK]

Note: If manual function(s) are not working properly, refer to that section for troubleshooting.
(ex. Base Up / Down)

Refer To:

Hand Foot Controls	B-3
Main PC Board	B-37
Wiring Diagrams	D-1
Exploded Views / Part Numbers	E-1

Go To Page:

Is table already in Chair Position?

1st ✓

Loose / Damaged Wire Connections
(Foot control to PC Board)

2nd ✓

Foot Control

Refer to: Section B - Hand & Foot Controls

3rd ✓

Main PC Board

Refer to: Section B - Main PC Board

4th ✓

MA757100i

Models:
Serial Numbers:

ALL

Quick-Chair™
Function

Operation & Troubleshooting

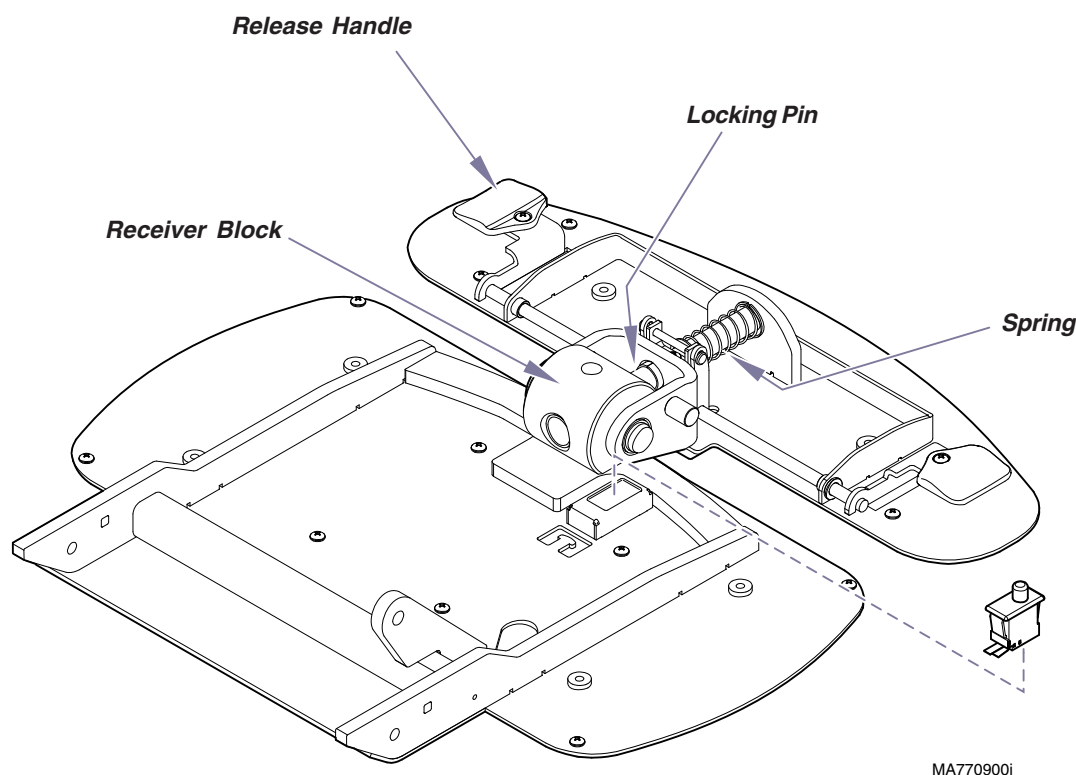
Foot Extension

This illustration highlights the mechanical components of the foot extension latch mechanism.



Equipment Alert

The weight capacity of the foot extension is 120 lbs (54.4kg). Exceeding this limit may result in equipment damage.



Latch Mechanism

When either foot extension **release handle** is pressed, the associated linkage retracts the **locking pin**. When the locking pin disengages the **receiver block**, the foot extension will move freely.

When the foot extension is moved to either of the two locking positions (*extended / stowed*), **spring** pressure engages the locking pin into the receiver block.

Foot Extension Limit Switch

The foot extension limit switch does not affect the mechanical function of the foot extension.

A faulty switch may affect any / all of the following chair functions:
Base Down, Tilt Down, Foot Down

Troubleshooting

[Foot Extension]

Problem

Go To Page:

Foot extension will not lock in place A-53

Foot extension will not release A-53

Operation & Troubleshooting

Foot Extension - continued

Problem: Foot extension will not lock in place. - **or**
Foot extension will not release.

Refer To:

Foot Extension & Limit Switch B-24
Exploded Views / Part Numbers E-7

Go To Page:

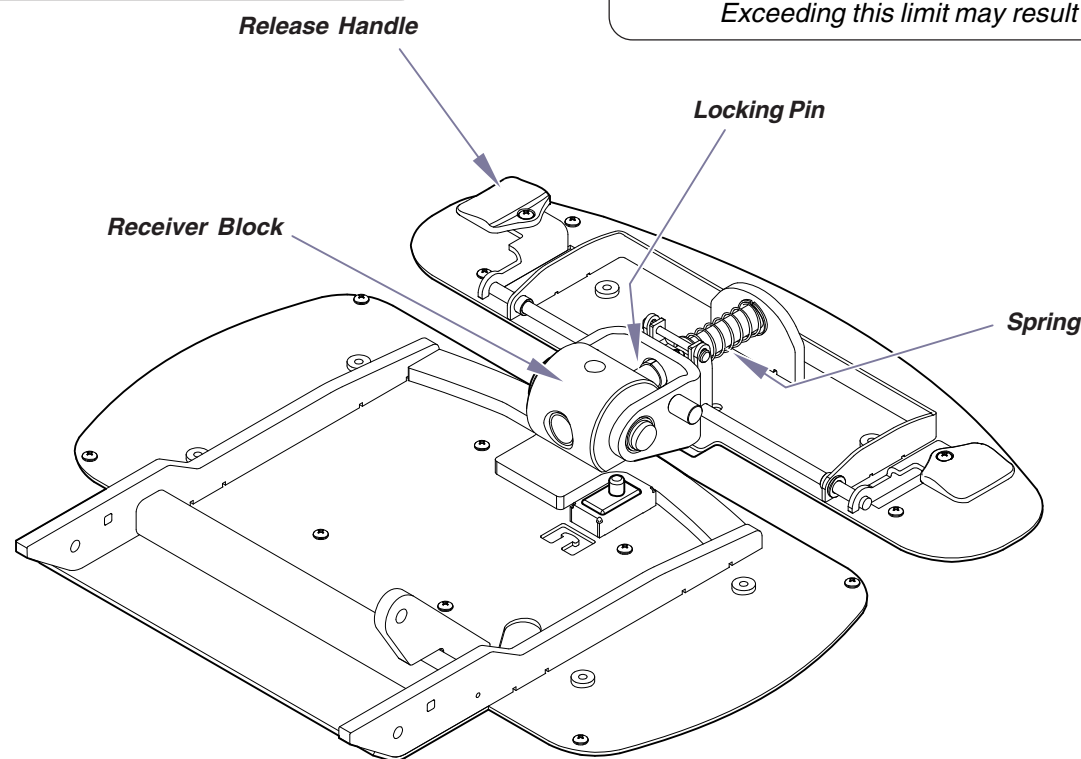
Inspect Latch Mechanism

Remove any debris, replace damaged / faulty components
Refer to: Section B - Foot Extension & Limit Switch

1st ✓

Equipment Alert

The weight capacity of the foot extension is 120 lbs (54 kg).
Exceeding this limit may result in equipment damage.



MA771200i

Models:
Serial Numbers:

ALL**Foot Extension**

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Operation & Troubleshooting

Chair Receptacles (optional - 115 VAC models only)

This illustration shows only the components that affect the chair receptacle.

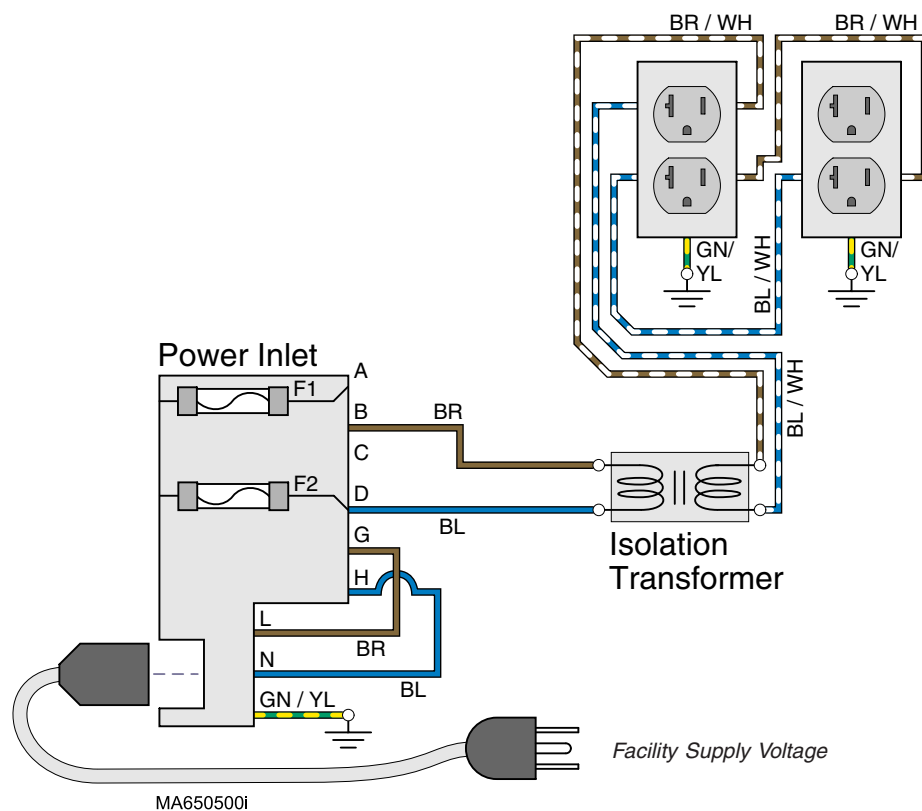
Troubleshooting [Chair Receptacles]

Problem

Go To Page:

No power at receptacles A-55

Only the wires that affect the chair receptacles are shown.



Facility Supply Voltage

With the chair power cord properly connected, facility supply voltage (115 VAC) is supplied thru the cord to the power inlet.

Power Inlet



Equipment Alert

The voltage setting displayed in the power inlet window must match facility supply voltage (115 VAC).
[Remove fuse holder and rotate 180° to change voltage setting].

Current flows thru two fuses in the power inlet, to the isolation transformer.

Isolation Transformer

Note

The isolation transformer separates the receptacles from the rest of the chair's electrical system. This transformer is protected from overload by a thermal cutout feature. It will automatically reset when the transformer cools.

The isolation transformer provides 115 VAC to each of the chair receptacles.

Operation & Troubleshooting

Chair Receptacles - continued

Problem: No power at receptacle(s).

Refer To:

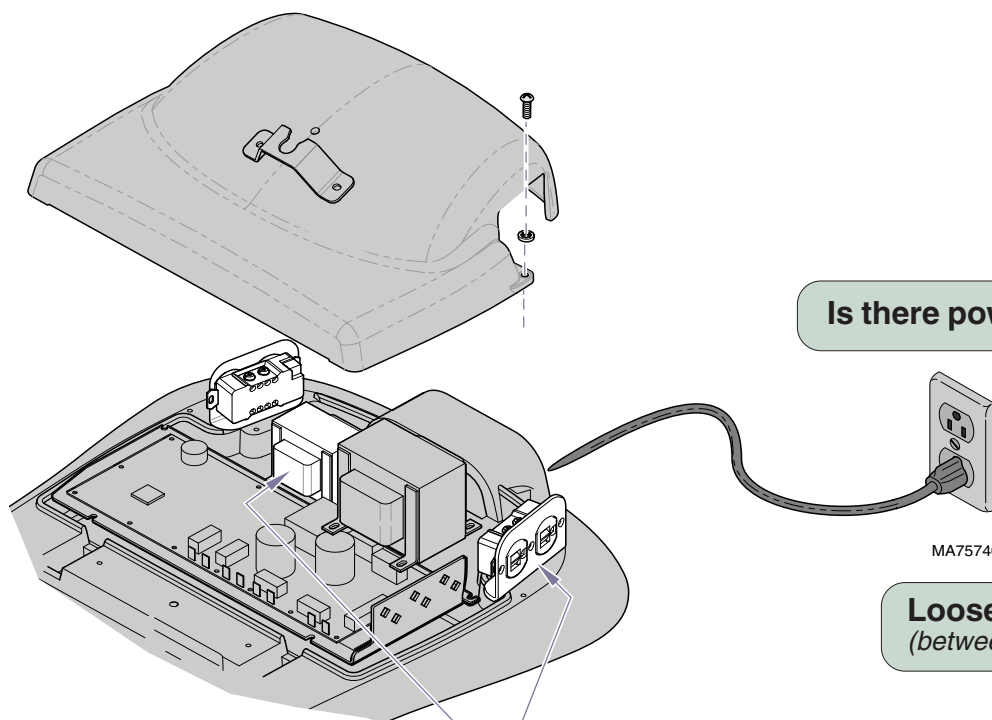
Isolation Transformer /

Chair Receptacle B-28

Wiring Diagrams D-1

Exploded Views / Part Numbers E-1

Go To Page:



Is there power to the chair?

1st ✓

MA757400i

Loose / Damaged Wire Connections
(between power inlet & receptacles)

2nd ✓

Isolation Transformer / Receptacle

Refer to: Section B - Isolation Transformer / Chair Receptacle

3rd ✓

Models:
Serial Numbers:

641 (-003)
all

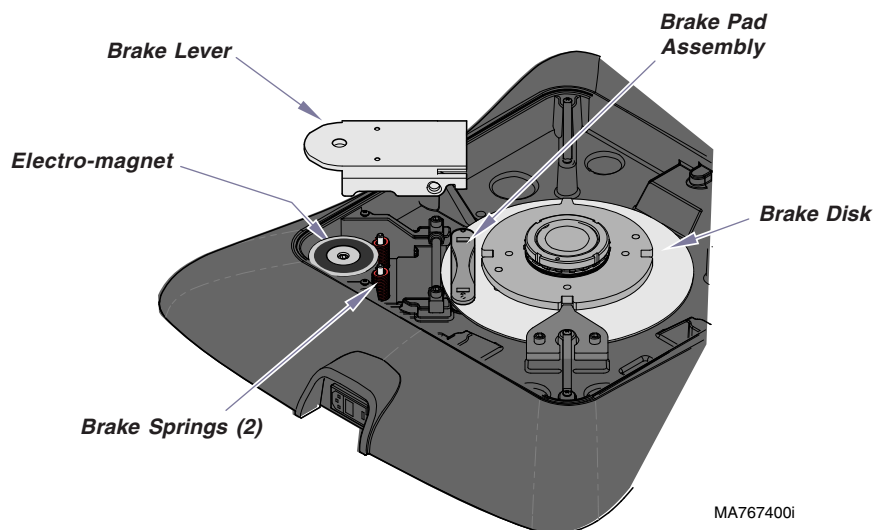
Chair Receptacles

A-55

Operation & Troubleshooting

Rotational Base Brake System (optional)

This illustration shows only the components that affect the Rotational Base Brake System. A detailed description of current flow during this function also appears below.



MA767400i

Base Rotation LOCKED:

The two brake springs press upward on the brake lever. This pivots the brake lever so that pressure is applied to the brake pad assembly. This prevents the brake disk from rotating.

To unlock base rotation:

Press & release either brake pedal.

Base Rotation UNLOCKED:

The rotational base PC board supplies 31 - 36 VAC to the two normally closed brake switches. When either brake pedal is pressed & released, the corresponding brake switch opens. When the open switch is detected, the PC board supplies approximately 15 - 20 VAC to the electro-magnet thru the F1 fuse.

When voltage is applied to the electro-magnet, the magnet's pull overpowers the brake springs. This removes pressure from the brake pad assembly allowing the brake disk to rotate.

To lock base rotation:

Press & release either brake pedal.

Note: Base automatically locks in place after 2 minutes.

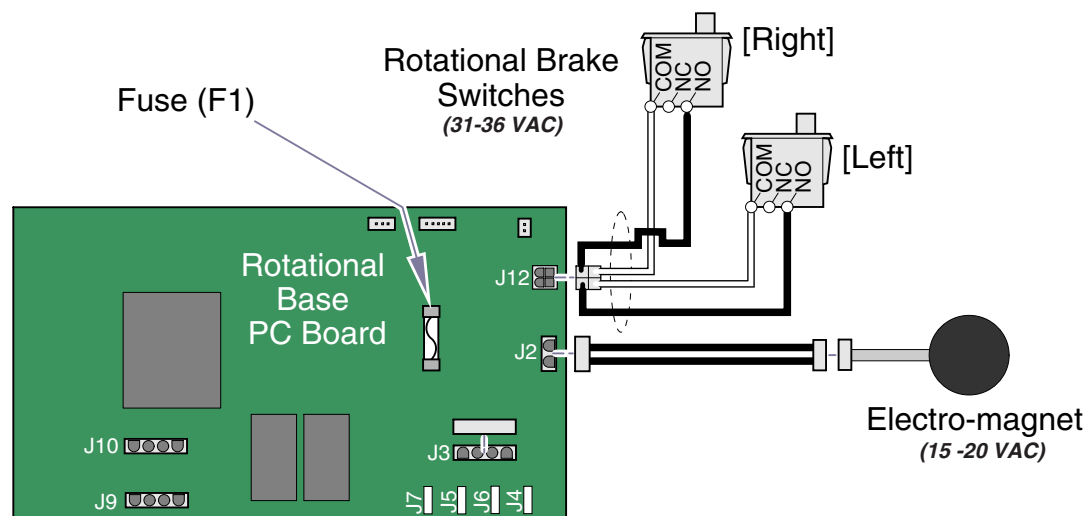
Troubleshooting

[Rotational Base Brake System]

Problem

Go To Page:

Base rotation will not unlock A-57
 Base rotation will not lock A-58
 Base "wobbles" when locked A-59
 Base grinds when rotating A-59



MA708900i

Operation & Troubleshooting

Rotational Base Brake System - continued

Problem: Base rotation will not unlock.

Refer To:

Rotational Base Brake System B-41

Wiring Diagrams D-1

Go To Page:

Check both brake pedals

1st ✓

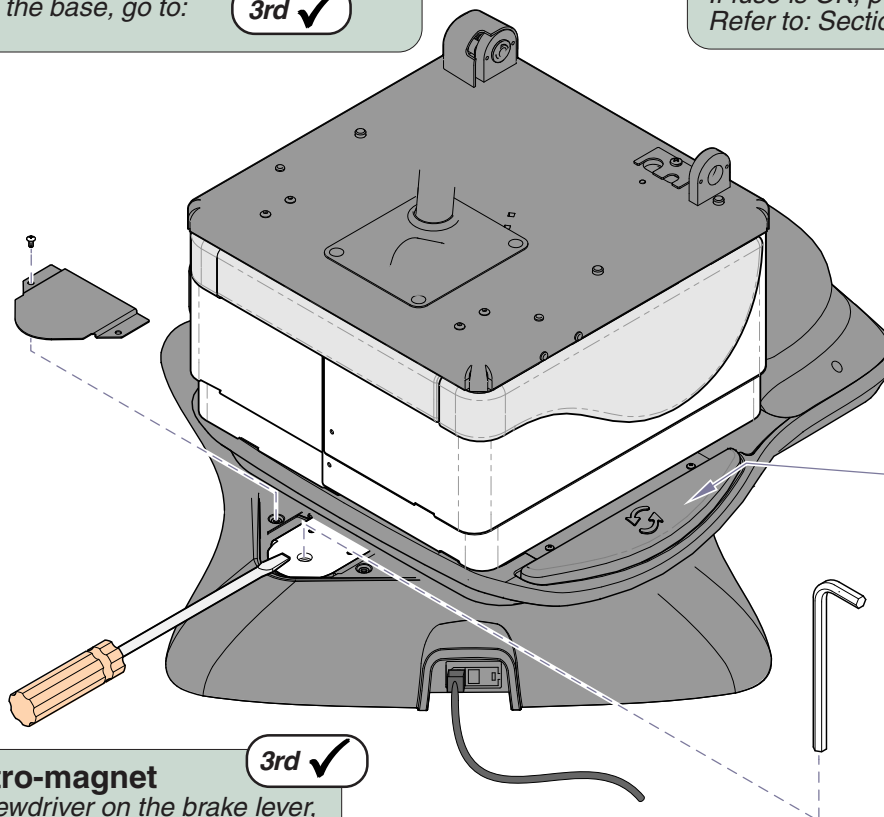
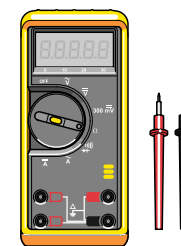
If one brake pedal unlocks the base, go to: 2nd ✓

If neither pedal unlocks the base, go to: 3rd ✓

Check Rotational Base PC Board Fuse

5th ✓

If fuse is OK, perform Rotational Brake Electrical Test
Refer to: Section B - Rotational Base Brake System



Faulty brake pedal switch

2nd ✓

Check connections / replace switch if necessary.
Refer to: Section B - Rotational Base Brake System

Check the electro-magnet

3rd ✓

While holding a screwdriver on the brake lever,
press & release the brake pedal.

Can you feel the electro-magnet energize?

If YES, go to: 4th ✓

If NO, go to: 5th ✓

Perform Magnet Position Adjustment

4th ✓

Refer to: Section B - Rotational Base Brake System

MA767200i

Models:
Serial Numbers:

641 (-004 & -005)
all

**Rotational Base
Brake System**

Operation & Troubleshooting

Refer To:

Rotational Base Brake System B-41

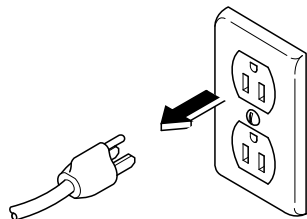
Wiring Diagrams D-1

Go To Page:**Rotational Base Brake System - continued****Problem:** Base rotation will not lock.**Unplug table power cord**

1st ✓

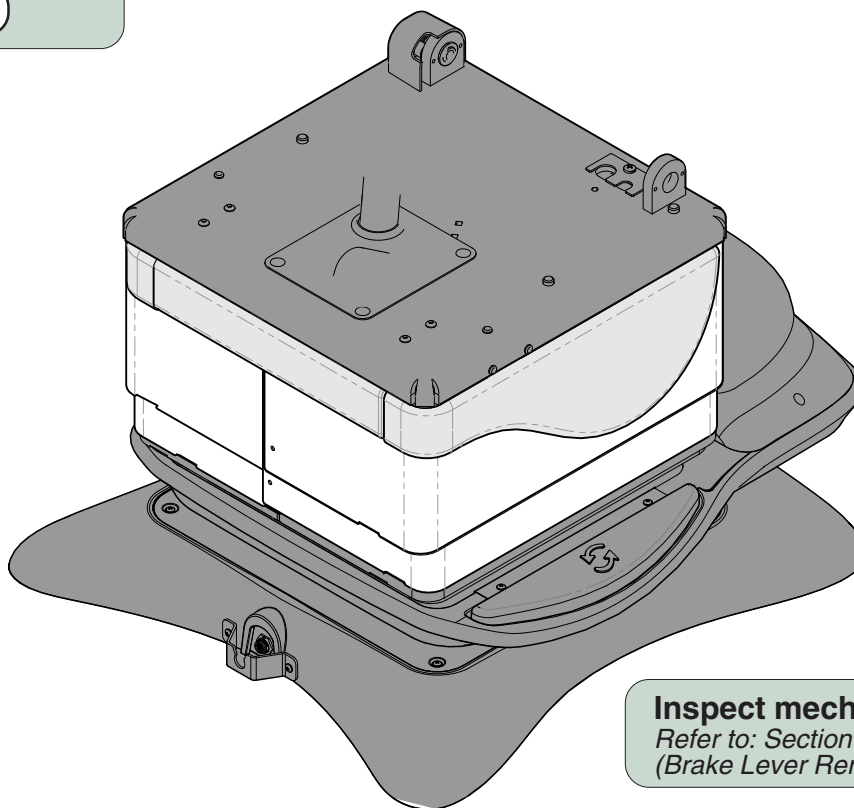
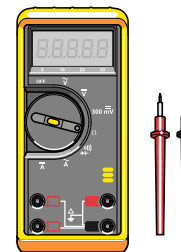
If base rotation locks, go to: 2nd ✓

If base does not lock, go to: 3rd ✓

**Perform Rotational Brake Electrical Test**

2nd ✓

Refer to: Section B - Rotational Base Brake System

**Inspect mechanical brake components.**

3rd ✓

Refer to: Section B - Rotational Base Brake System
(Brake Lever Removal)

Operation & Troubleshooting

Rotational Base Brake System - continued

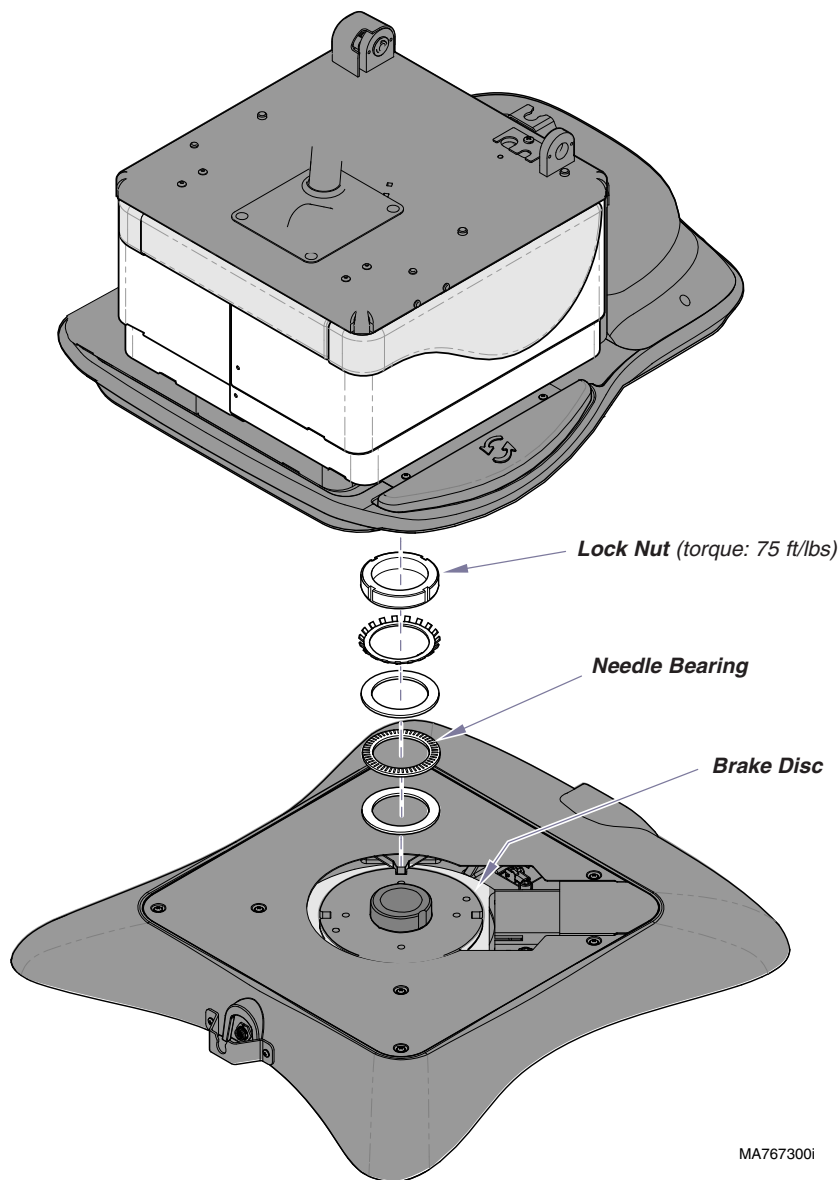
Problem: Base "wobbles" when locked. - and / or
Base makes grinding noise when rotating

Refer To:

Rotational Base Brake System B-41

Wiring Diagrams D-1

Go To Page:



1st ✓ Debris between upper & lower castings

Without separating the base castings, remove any debris.

2nd ✓ Loose hub screws

Tighten four screws securing the upper & lower castings.

For access instructions refer to:
Section B - Rotational Base Brake System
(Separating Upper & Lower Base Castings)

3rd ✓ Inspect rotation bearings / brake disc

Inspect needle bearing & brake disc for damage, debris, etc.
Lock nut must be tightened to 75 ft/lbs.

For access instructions refer to:
Section B - Rotational Base Brake System
(Separating Upper & Lower Base Castings)

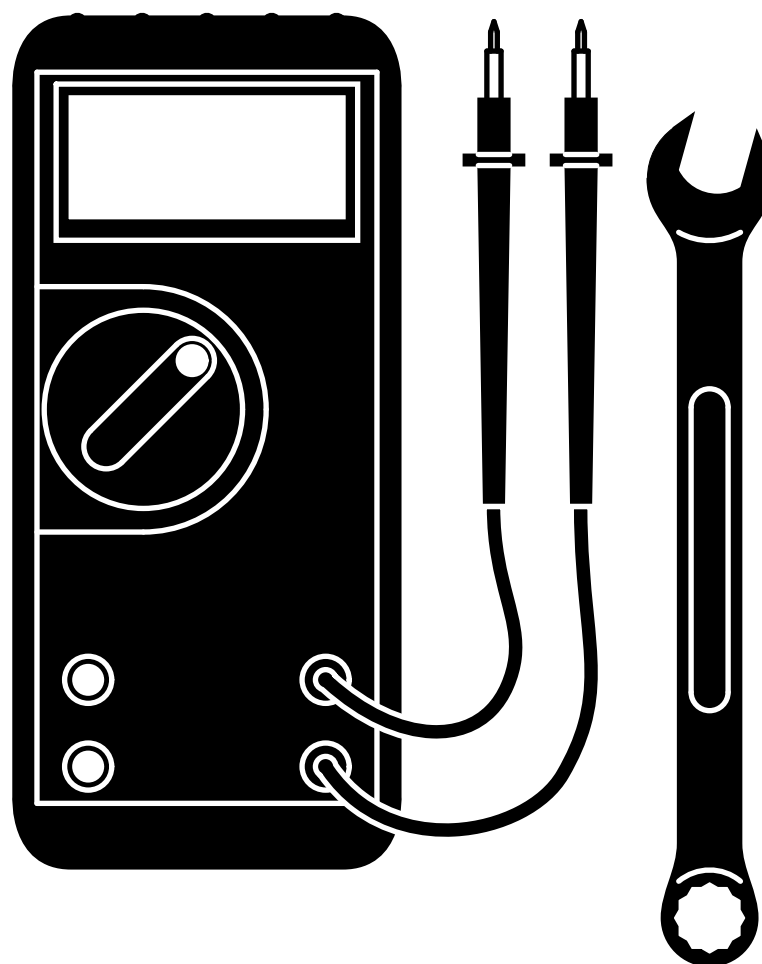
Models:
Serial Numbers:

641 (-004 & -005)
all

**Rotational Base
Brake System**

Section B

Component Testing & Repair

**Components****Go To Page:**

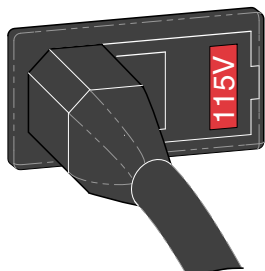
Primary Fuses	B-2
Hand / Foot Control	B-3
Base Actuator / Limit Switches	B-6
Back Actuator / Limit Switches	B-10
Tilt Actuator / Limit Switch	B-14
Foot Actuator / Limit Switches	B-19
Foot Extension / Limit Switch	B-24
Gas Springs	B-27
Isolation Transformer / Table Receptacles	B-28
Main System Transformer	B-29
Position Sensors	B-31
Main PC Board	B-37
Rotational Base Brake System	B-41

Click on the Go To Page button and enter the desired page number. (Note: Letters are case sensitive. ex. E-2)

Component Testing & Repair

Primary Fuses

Location / Voltage Setting



Equipment Alert

When replacing fuses, rotate fuse holder so that the correct voltage setting appears in window.

Voltage setting must match facility supply voltage.

Incorrect setting will result in damage to the table.

Primary Fuses

Go To Page:

Location / Voltage Setting B-2

Wiring Diagrams D-1

Fuse Rating **6.3A, 250V**

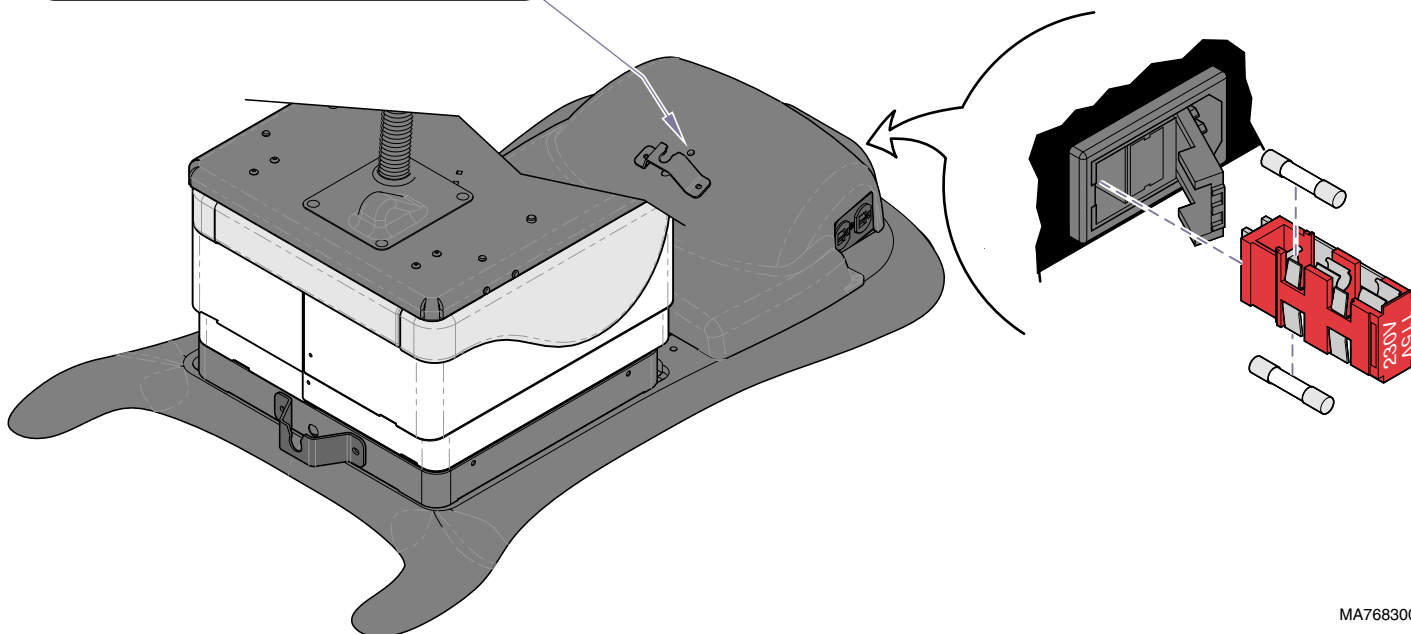
Type T, 5 x 20mm

Part Number **015-0346-40**

If Power Indicator Light is...

OFF: No power to table (check the fuses)

ON: Table has power (fuses - OK)



MA768300i

Primary Fuses

Models:
Serial Numbers:

ALL

Component Testing & Repair

Hand & Foot Controls

Isolating a Malfunction



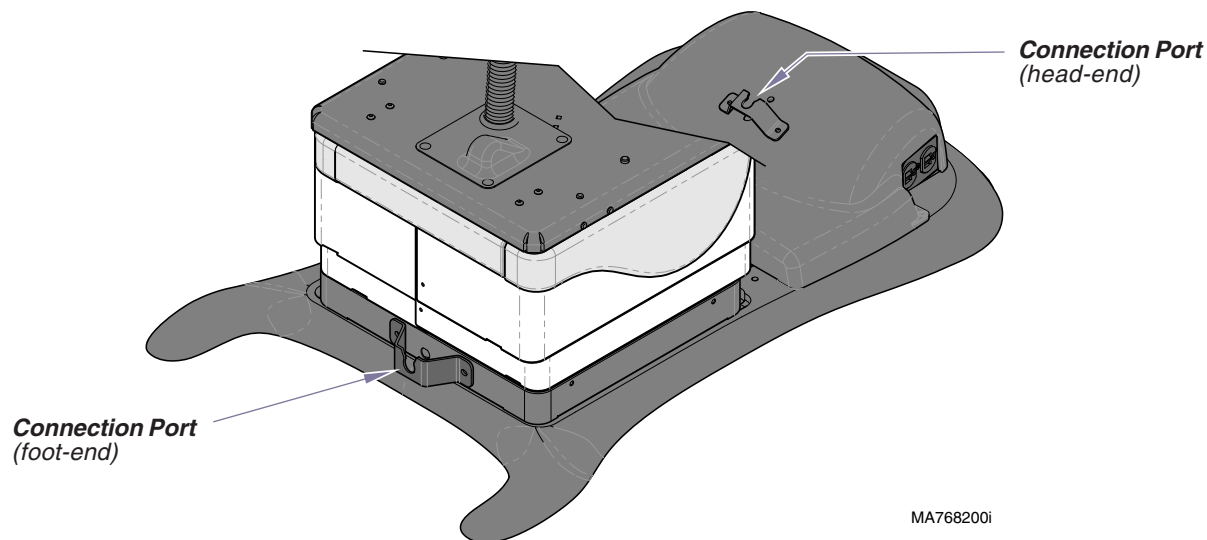
To isolate a malfunction...

Plug the hand / foot control into the other connection port.

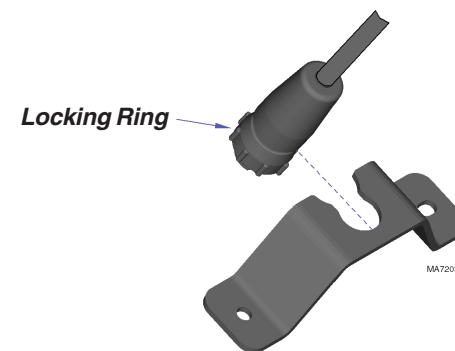
Does the hand / foot control work properly?

If **YES**, replace the wire harness at the malfunctioning connection port. (Refer to *Wiring Diagrams* for part number).

If **NO**, perform the *Hand / Foot Control Test*.



Note: The cord connector is "keyed" and must be oriented properly to connect. Tighten locking ring to secure connection.



Hand & Foot Controls

Go To Page:

Isolating a Malfunction B-3

Hand / Foot Control Test B-4

Control Cord Continuity Test B-5

Wiring Diagrams D-1

Exploded View / Part Numbers:

Foot Control (Linear-style) E-23

Foot Control (Disc-style) E-24

Hand Control E-25

Models:
Serial Numbers:

ALL

Hand & Foot Controls

B-3

Component Testing & Repair

Hand & Foot Controls - continued

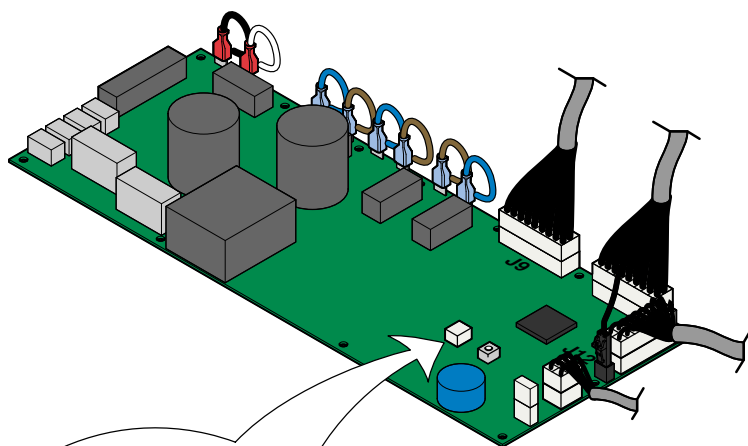
Hand / Foot Control Test

Refer To:

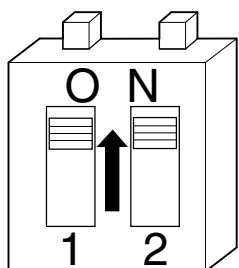
Control Cord Test B-5

Access Procedures (Cover Removal) C-1

Go To Page:



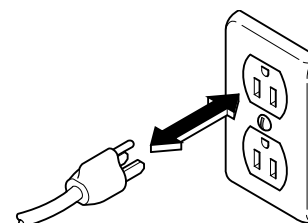
MA653000i



MODE SELECT

Hand/Foot Control Test

Step 1: Move both switches on MODE SELECT block to ON.



Hand/Foot Control Test

Step 2: Unplug table (to reset PC Board). Plug table back in.

Hand/Foot Control Test

Step 3: One at a time, press & hold each button on the hand / foot control.

Do you hear "beeps" each time a button is pressed?

If **YES**, that button is functioning properly.
If **NO**, perform the Control Cord Test.



ATTENTION!

To return to normal operation...

- Move MODE SELECT block switches back to original position.
- Unplug table (to reset board).
- Plug table back in.

Component Testing & Repair

Hand & Foot Controls - continued

Control Cord Test

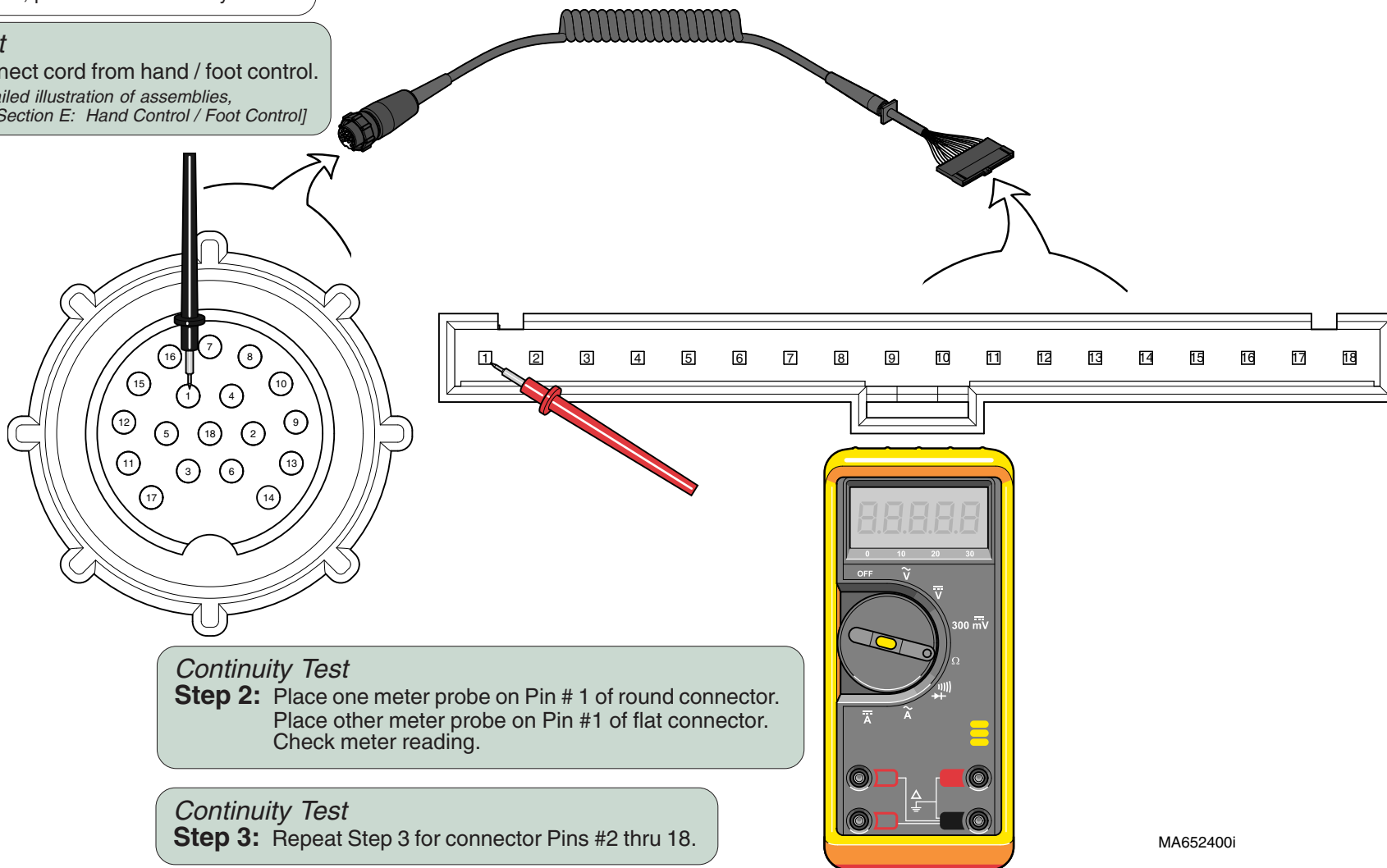
Attention

The hand & foot control cords are interchangeable.
If a working cord is available, switch the cords to test.
If one is not available, perform the Continuity Test.

Continuity Test

Step 1: Disconnect cord from hand / foot control.

[For detailed illustration of assemblies,
refer to Section E: Hand Control / Foot Control]



Continuity Test

Step 2: Place one meter probe on Pin # 1 of round connector.
Place other meter probe on Pin #1 of flat connector.
Check meter reading.

Continuity Test

Step 3: Repeat Step 3 for connector Pins #2 thru 18.

Meter Reading	Status	Required Action
<u>ALL pins</u> less than 100 Ω		Cord - OK [Replace touch pad]
<u>ANY pin(s)</u> OL		Replace control cord.

Models:
Serial Numbers:

ALL

Hand & Foot Controls

Component Testing & Repair

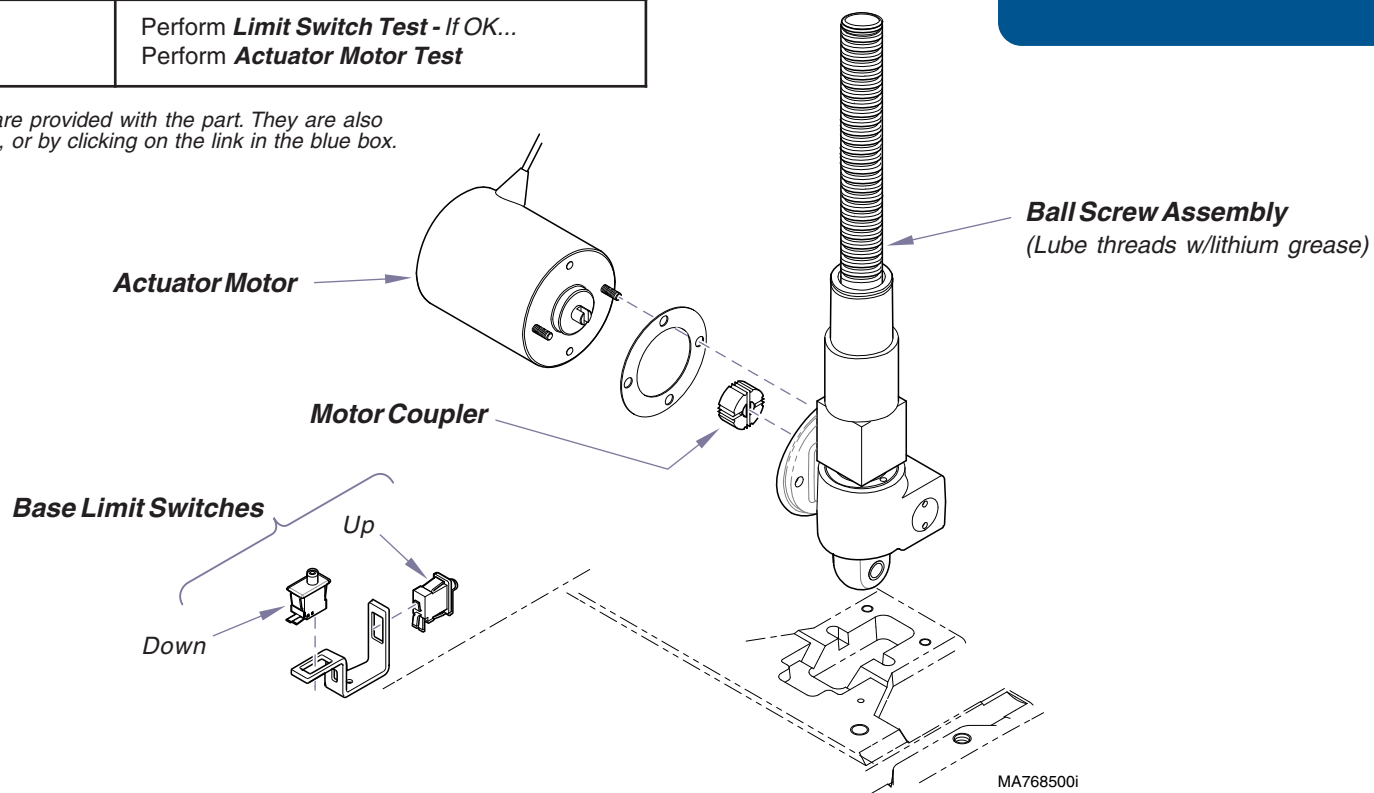
Base Actuator / Limit Switches

Isolating a Malfunction

This illustration shows the base limit switches and the three serviceable components of the base actuator. Use the table below to isolate the malfunction.

Problem	Required Action
Motor runs, but makes grinding noise.	Clean / lube actuator threads. Replace actuator if necessary*.
Motor runs, but table does not move.	Inspect / replace motor coupler*.
Motor does not run.	Perform Limit Switch Test - If OK... Perform Actuator Motor Test

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.



Base Actuator

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www.Documark.com:

File Name

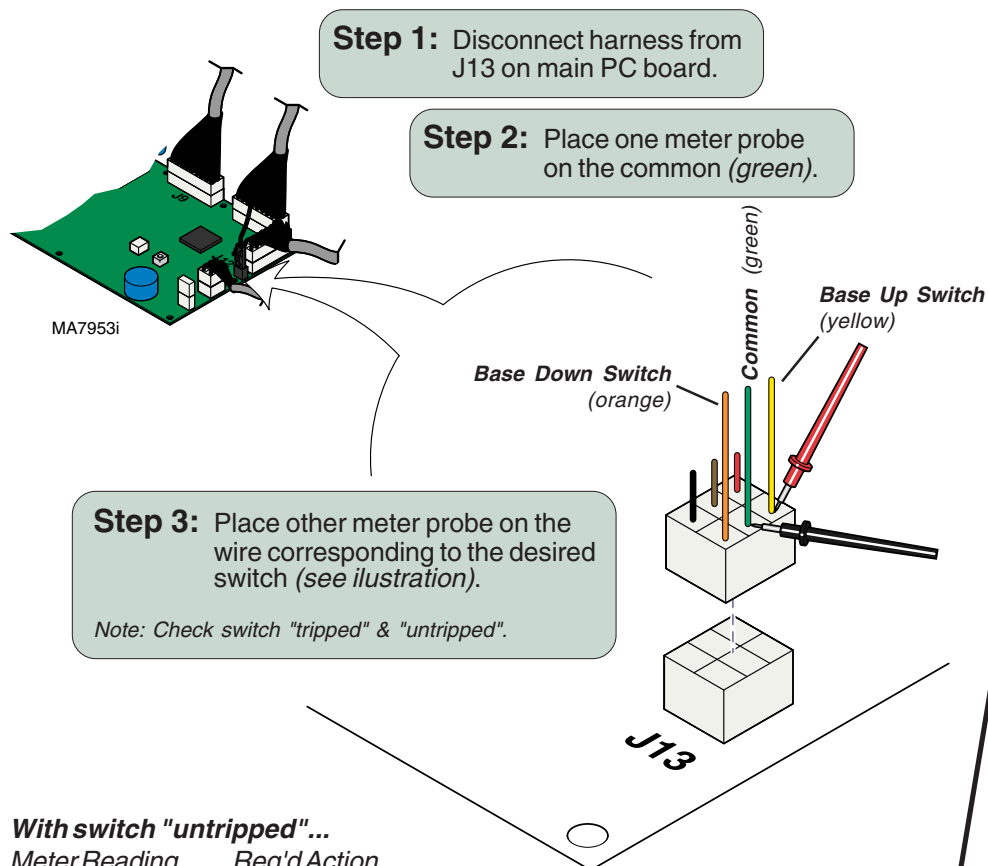
Base Actuator / Motor

Replacement..... 003-1739-00

Component Testing & Repair

Base Actuator / Limit Switches - continued

Limit Switch / Harness Test



With switch "untripped"...

Meter Reading Req'd Action

OL	Perform Limit Switch Continuity Test
less than 10 Ω	Limit switch / harness - OK Perform Actuator Motor Test

With switch "tripped"...

less than 10 Ω	Perform Limit Switch Continuity Test
OL	Limit switch / harness - OK Perform Actuator Motor Test

Models:
Serial Numbers:

ALL

Refer To:

Actuator Motor Test B-8

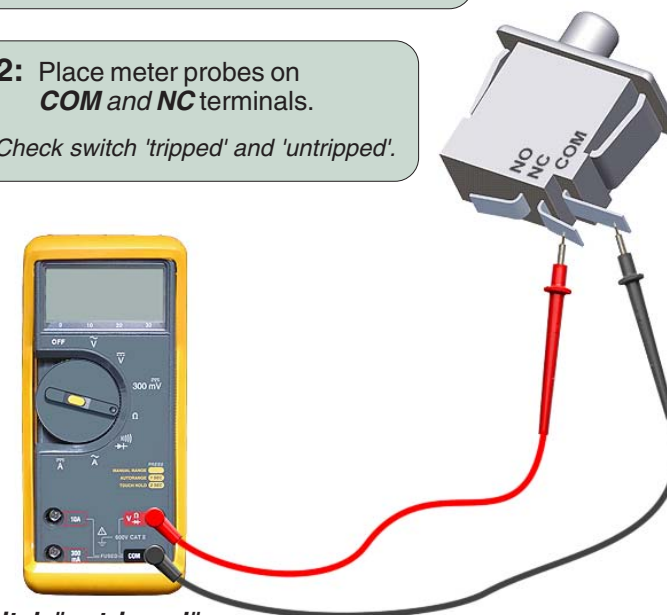
Go To Page:

Limit Switch Continuity Test

Step 1: Tag / disconnect wires from switch.

Step 2: Place meter probes on **COM** and **NC** terminals.

Note: Check switch 'tripped' and 'untripped'.



With switch "untripped"...

Meter Reading Req'd Action

OL	Replace limit switch.
less than 5 Ω	Limit switch - OK Replace limit switch harness.

With switch "tripped"...

less than 5 Ω	Replace limit switch.
OL	Limit switch - OK Replace limit switch harness.

**Base Actuator /
Limit Switches**

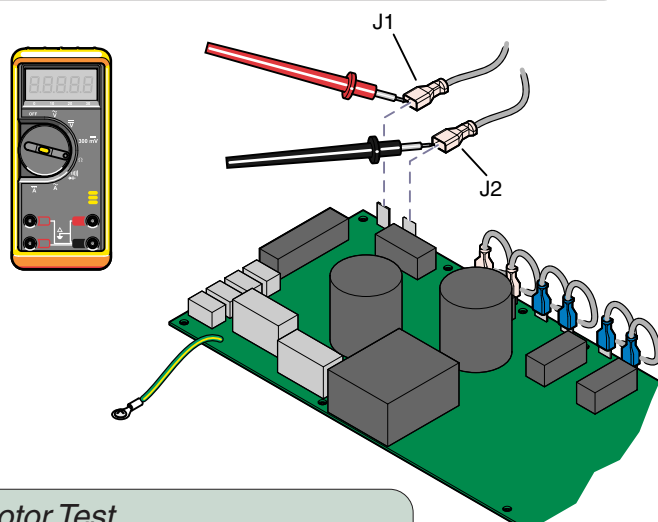
Component Testing & Repair

Base Actuator / Limit Switches - continued

Actuator Motor Test

Actuator Motor Test

Step 1: Tag, then disconnect base actuator wires (J1 & J2).



Actuator Motor Test

Step 2: Place meter probes on actuator wires. Check meter reading.

Meter Reading Status Required Action

1 to 10 Ω		Actuator motor - OK. Perform Motor Ground Test
OL -or- less than 1 Ω		Replace motor*.

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Refer To:

PC Board Test B-9

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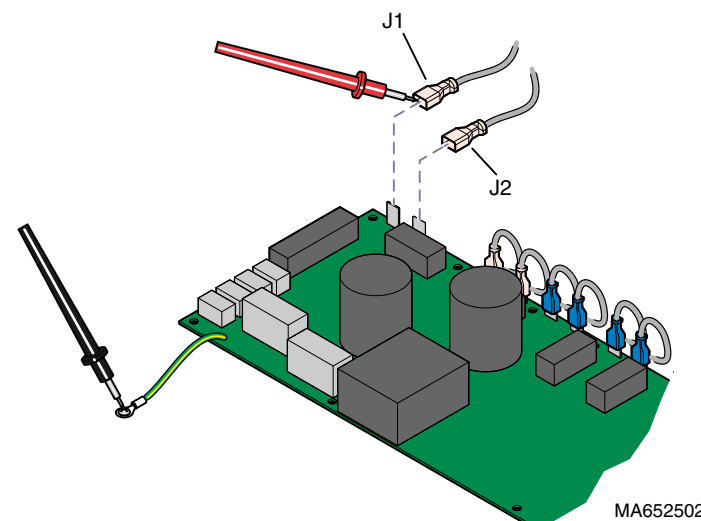
www.Documark.com:

File Name

Base Actuator / Motor

Replacement 003-1739-00

Motor Ground Test



Motor Ground Test

Step 1: Place one meter probe on actuator wire (J1). Place other meter probe on PC board ground wire. Check meter reading. (Repeat for J2)

Meter Reading Status Required Action

OL -or- more than 1 M Ω		Motor harness - OK. Perform PC Board Test
less than 1 Ω		Replace motor*.

Component Testing & Repair

Base Actuator / Limit Switches - continued

PC Board Test

PC Board Test

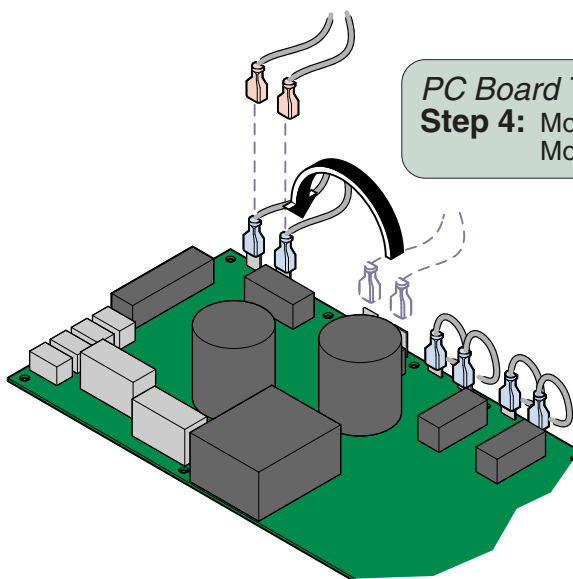
Step 1: Move **BACK** section so that it is approx. halfway between its maximum & minimum positions.

PC Board Test

Step 3: Tag, then disconnect base actuator wires from J1 & J2.

PC Board Test

Step 4: Move wire from J3 to J1.
Move wire from J4 to J2.



Back Section
Max. Position

Base
Max. Position
(Up limit switch is tripped)

Back Section
Min. Position

Base
Min. Position
(Down limit switch is tripped)

www.Documark.com:

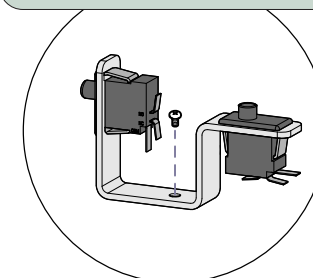
PC Board Replacement 003-1490-00

Go To Page:

PC Board Test

Step 2: This test **cannot** be performed if either base limit switch is tripped.

If necessary, remove switch bracket.
(Switch wires **must** remain connected)



Equipment Alert

The back limit switches will not stop movement during this test.

Do not run past max. / min. positions.

PC Board Test

Step 5: Press & hold Base Up button for 5 seconds.

Does **back section** move up briefly, then stop & "beep"?

If **YES**, go to Step 6.

If **NO**, replace PC Board*.

PC Board Test

Step 6: Press & hold Base Down button for 5 seconds.

Does **back section** move down briefly, then stop & "beep"?

If **YES**, PC Board is OK.

If **NO**, replace PC Board*.



Models:
Serial Numbers:

ALL

Base Actuator /
Limit Switches

B-9

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Component Testing & Repair

Back Actuator / Limit Switches

Isolating a Malfunction

This illustration shows the back limit switches and the three serviceable components of the back actuator. Use the table below to isolate the malfunction.

Problem	Required Action
Motor runs, but makes grinding noise.	Clean / lube actuator threads. Replace actuator if necessary*.
Motor runs, but table does not move.	Inspect / replace motor coupler*.
Motor does not run.	Check limit switch wire connections. - If OK... Perform Actuator Motor Test .

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Back Actuator / Limit Switches

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Isolating a Malfunction	B-10
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[File Name](#)

Back Actuator / Motor

Replacement..... 003-1738-00

Back Limit Switches**



** Equipment Alert

Do not adjust the individual switches!
The limit switches & bracket must be replaced as a complete assembly.

Motor Coupler

Screw Assembly
(Lube threads w/lithium grease)

Actuator Motor

MA769100i

Component Testing & Repair

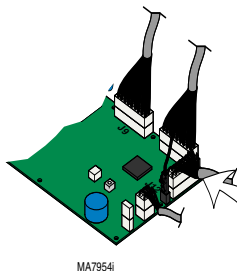
Back Actuator / Limit Switches - continued

Refer To:

Actuator Motor Test B-12

Go To Page:

PC Board Harness Test

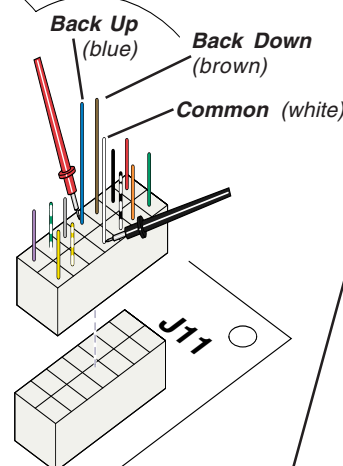


Step 1: Disconnect harness from J11 on main PC board

Step 2: Place one meter probe on the common (white).

Step 3: Place other meter probe on the wire corresponding to the desired switch (see illustration).

Note: Check switch "tripped" & "untripped".



**Back Down switch "untripped"... - OR -
Back Up Switch "tripped"...**

Meter Reading Req'd Action

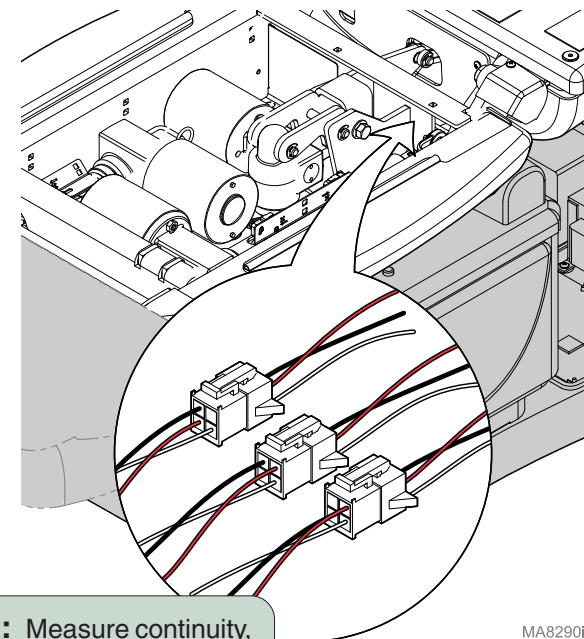
OL	Perform Limit Switch Harness Test
less than 10 Ω	Limit switch / harness - OK Perform Actuator Motor Test

**Back Down switch "tripped"... - OR -
Back Up Switch "untripped"...**

less than 10 Ω	Perform Limit Switch Harness Test
OL	Limit switch / harness - OK Perform Actuator Motor Test

Limit Switch Harness Test

Step 1: Unplug the appropriate limit switch harness.



Step 2: Measure continuity,

Meter reading should be...

Actuator Full Up	White to Black - Open White to Red - Closed
Actuator Full Down	White to Black - Closed White to Red - Open
Actuator Midway Point	White to Black - Closed White to Red - Closed

Models:
Serial Numbers:

ALL

**Back Actuator/
Limit Switches**

B-11

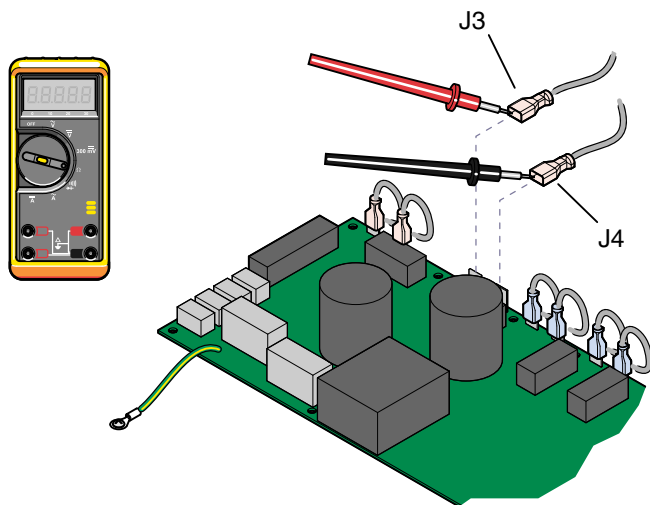
Component Testing & Repair

Back Actuator / Limit Switches - continued

Actuator Motor Test

Actuator Motor Test

Step 1: Tag / disconnect back actuator wires (J3 & J4).



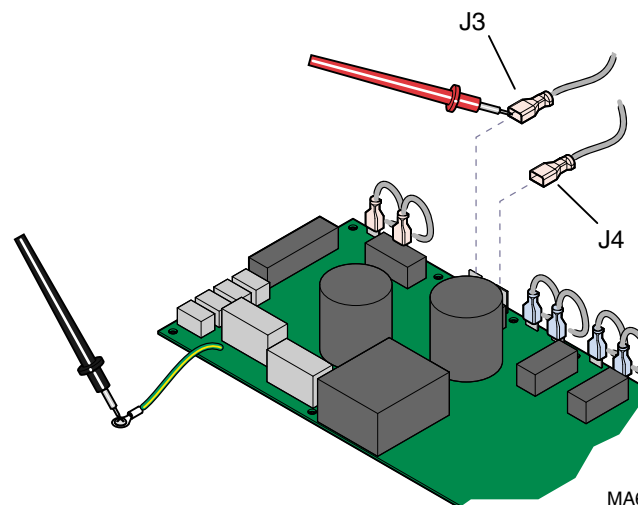
Actuator Motor Test

Step 2: Place meter probes on actuator wires. Check meter reading.

Meter Reading	Status	Required Action
1 to 10 Ω		Actuator motor - OK. Perform Motor Ground Test
OL -or- less than 1 Ω		Replace motor*.

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Motor Ground Test



Motor Ground Test

Step 1: Place one meter probe on actuator wire (J3). Place other meter probe on PC board ground wire. Check meter reading. (Repeat for J4)

Meter Reading	Status	Required Action
OL -or- more than 1 M Ω		Motor harness - OK. Perform PC Board Test
less than 1 Ω		Replace motor*.

Refer To:

PC Board Test B-13

Go To Page:

www.Documark.com:

File Name

Back Actuator / Motor

Replacement 003-1738-00

Component Testing & Repair

Back Actuator / Limit Switches - continued

PC Board Test

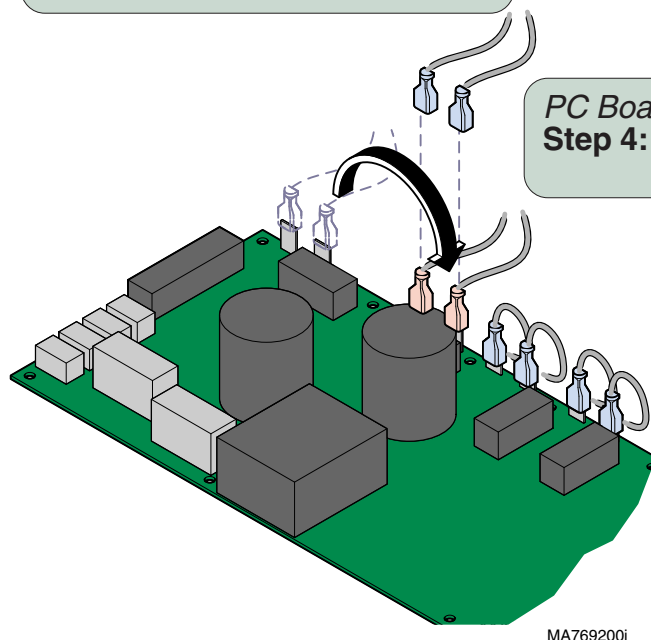
PC Board Test

Step 1: This test cannot be performed with the back section in the max. or min. position.

If necessary, reposition the back section.
Refer to: *Base Actuator - PC Board Test*

PC Board Test

Step 3: Tag, then disconnect back actuator wires from J3 & J4.

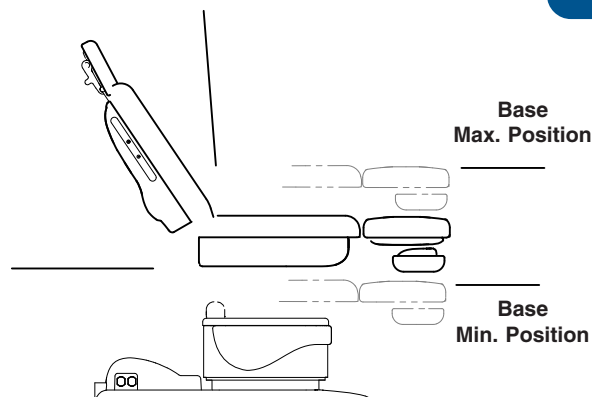


PC Board Test

Step 4: Move wire from J1 to J3.
Move wire from J2 to J4.

Back Section
Max. Position

Back Section
Min. Position



www.Documark.com:

PC Board Replacement 003-1490-00

Go To Page:

PC Board Test

Step 2: Move the **BASE** function so that it is approx. halfway between the maximum & minimum positions.



Equipment Alert

The base limit switches will not stop movement during this test.

Do not run past max. / min. positions.

PC Board Test

Step 5: Press & hold Back Up button for 5 seconds.

Does the **base** move up, then stop & "beep"?

If **YES**, go to Step 6.

If **NO**, replace PC Board*.

Back Up

Back Down



PC Board Test

Step 6: Press & hold Back Down button for 5 seconds.

Does the **base** move down, then stop & "beep"?

If **YES**, PC Board is OK.

If **NO**, replace PC Board*.

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Models:
Serial Numbers:

ALL

Back Actuator/
Limit Switches

B-13

Component Testing & Repair

Tilt Actuator / Limit Switch

Isolating a Malfunction

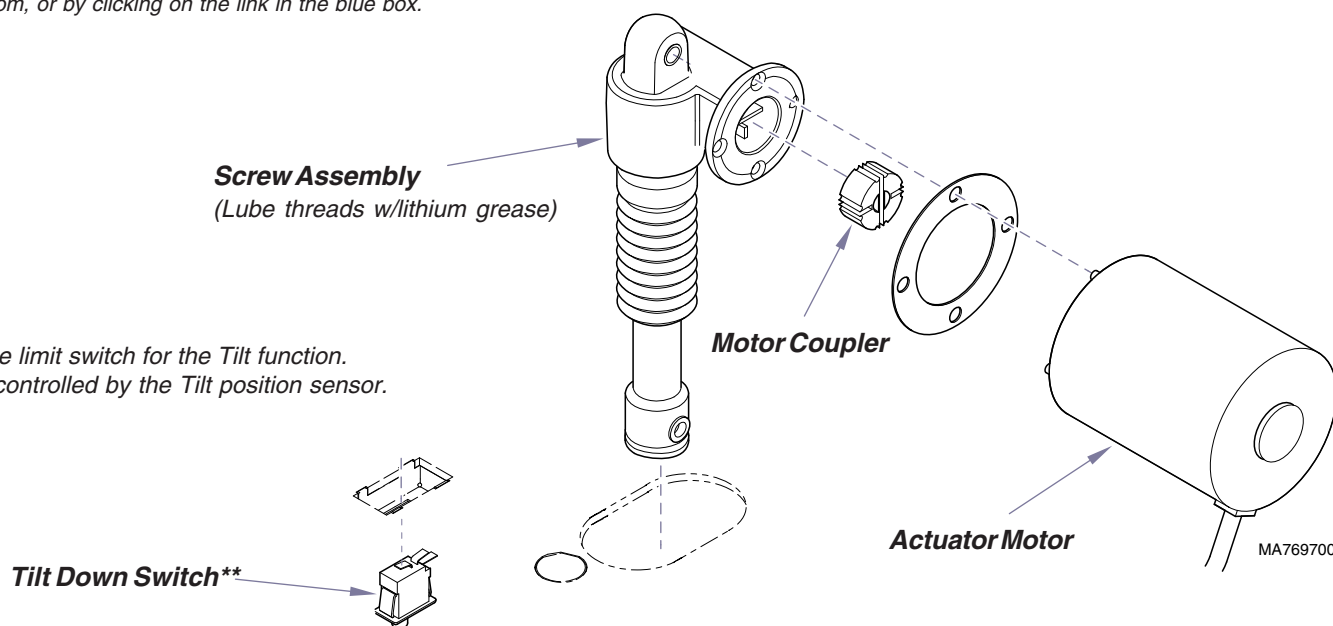
This illustration shows the Tilt Down Limit Switch and the three serviceable components of the tilt actuator. Use the table below to isolate the malfunction.

Problem

Required Action

Motor runs, but makes grinding noise.	Clean / lube actuator threads. Replace actuator if necessary*.
Motor runs, but table does not move.	Inspect / replace motor coupler*.
Motor does not run.	(Up <u>only</u>) Perform Position Sensor Test (at Tilt Sensor) (Down <u>only</u>) Perform Limit Switch Test . - If OK, (Up / Down) Perform Actuator Motor Test .

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.



** There is only one limit switch for the Tilt function.
The upper limit is controlled by the Tilt position sensor.

Tilt Actuator / Limit Switch

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Position Sensor Test	B-31
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www.Documark.com:

File Name

Tilt Actuator / Motor

Replacement..... 003-1742-00

Component Testing & Repair

Tilt Actuator / Limit Switch - continued

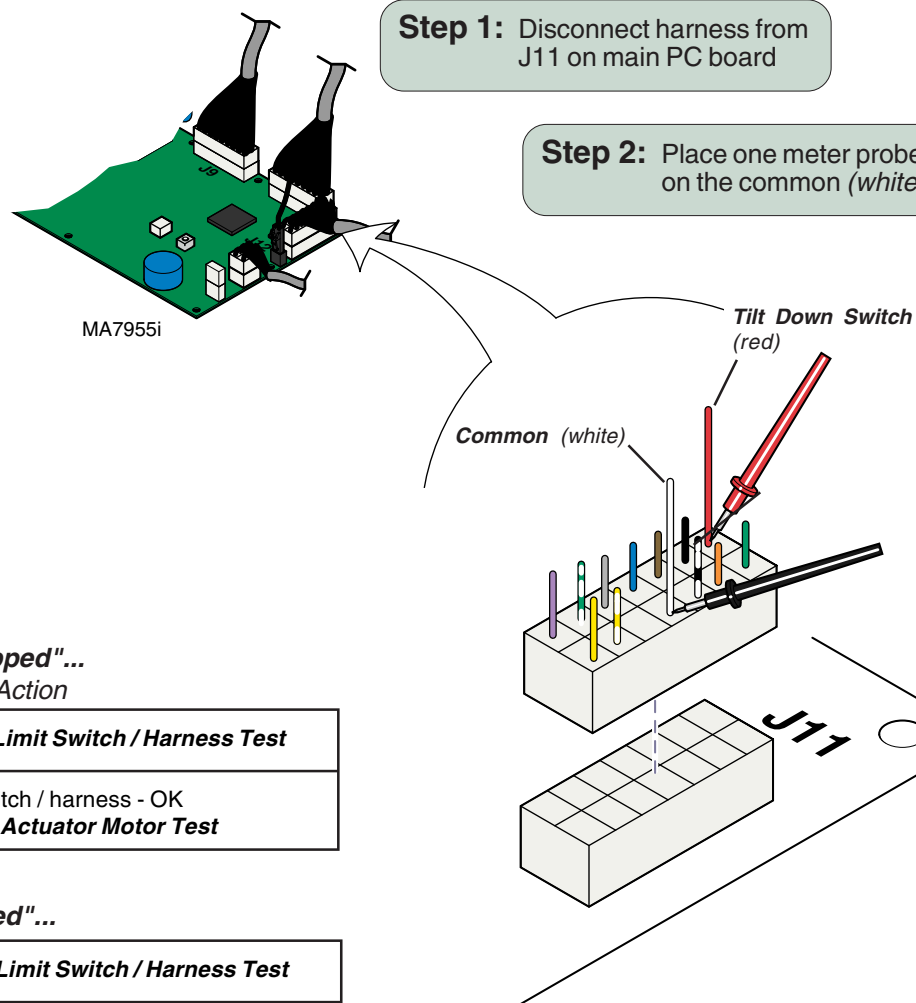
PC Board Harness Test

Refer To:

Limit Switch Continuity Test B-16

Actuator Motor Test B-17

Go To Page:



Tilt Down Switch "untripped"...

Meter Reading Req'd Action

OL	Perform Limit Switch / Harness Test
less than 10 Ω	Limit switch / harness - OK Perform Actuator Motor Test

Tilt Down Switch "tripped"...

less than 10 Ω	Perform Limit Switch / Harness Test
OL	Limit switch / harness - OK Perform Actuator Motor Test

Models:
Serial Numbers:

ALL

Tilt Actuator /
Limit Switch

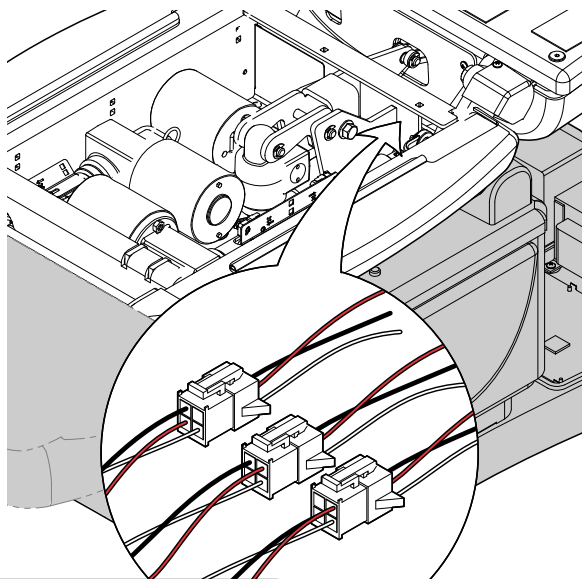
B-15

Component Testing & Repair

Tilt Actuator / Limit Switch - continued

Limit Switch Harness Test

Step 1: Unplug the appropriate limit switch harness.



Step 2: Measure continuity,

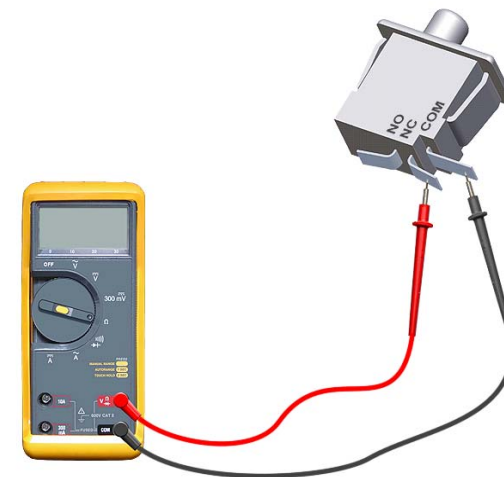
MA8290I

Meter reading should be...

Actuator Full Up	White to Black - Open White to Red - Closed
Actuator Full Down	White to Black - Closed White to Red - Open
Actuator Midway Point	White to Black - Closed White to Red - Closed

Limit Switch Test

Step 1: Tag & disconnect wires from switch.



Refer To:

Actuator Motor Test B-17

Go To Page:

Step 2: Place meter probes on **COM** and **NC** terminals.

Note: Check switch 'tripped' and 'untripped'.

With switch 'tripped'...

Meter Reading	Status	Required Action
OL		Limit switch - OK
less than 5 Ω		Replace switch

With switch 'untripped'...

Meter Reading	Status	Required Action
OL		Replace switch
less than 5 Ω		Limit switch - OK Perform Actuator Motor Test

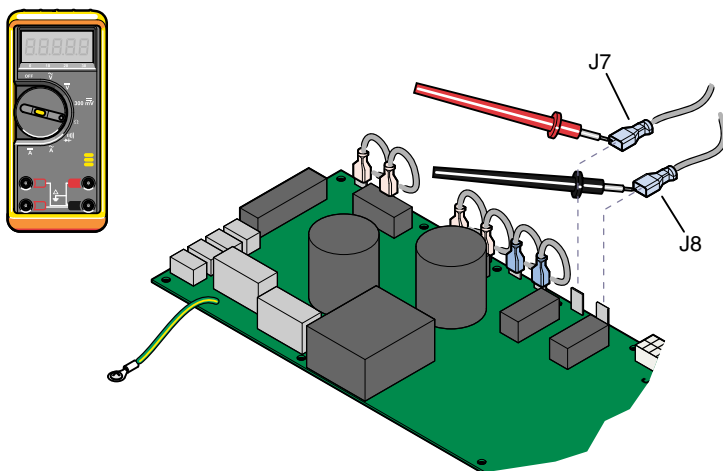
Component Testing & Repair

Tilt Actuator / Limit Switch - continued

Actuator Motor Test

Actuator Motor Test

Step 1: Tag, then disconnect tilt actuator wires (J7 & J8).



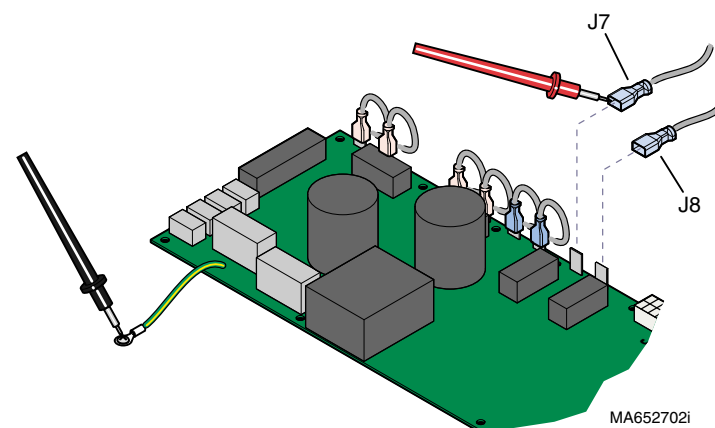
Actuator Motor Test

Step 2: Place meter probes on actuator wires. Check meter reading.

Meter Reading	Status	Required Action
1 to 10 Ω		Actuator motor - OK. Perform Motor Ground Test
OL -or- less than 1 Ω		Replace motor*.

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Motor Ground Test



Motor Ground Test

Step 1: Place one meter probe on actuator wire (J7). Place other meter probe on PC board ground wire. Check meter reading. (Repeat for J8)

Meter Reading	Status	Required Action
OL -or- more than 1 M Ω		Motor harness - OK. Perform PC Board Test
less than 1 Ω		Replace motor*.

Go To Page:

Refer To:

PC Board Test B-18

www.Documark.com:

File Name

Tilt Actuator / Motor

Replacement 003-1742-00

Models:
Serial Numbers:

ALL

Tilt Actuator /
Limit Switch

B-17

Component Testing & Repair

Tilt Actuator / Limit Switch - continued

PC Board Test

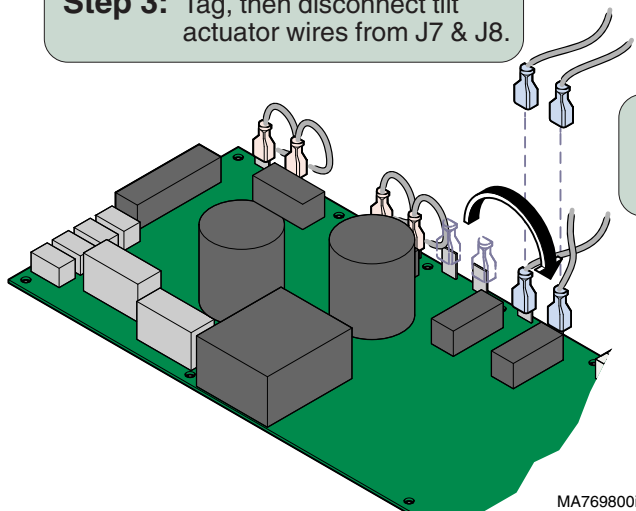
PC Board Test

Step 1: This test cannot be performed with the tilt function in the max. or min. position.

If necessary, reposition the tilt function.
Refer to: *Foot Actuator - PC Board Test*

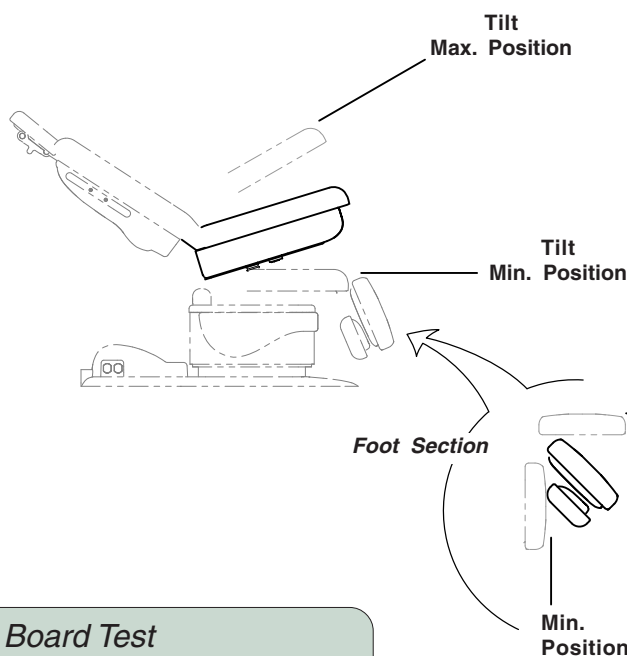
PC Board Test

Step 3: Tag, then disconnect tilt actuator wires from J7 & J8.



PC Board Test

Step 4: Move wire from J6 to J7.
Move wire from J5 to J8.



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PC Board Replacement 003-1490-00

Go To Page:

PC Board Test

Step 2: Move the **FOOT** section halfway between the max. & min. positions.



Equipment Alert

The foot limit switches will not stop movement during this test.

Do not run past max. / min. positions.

Tilt Up

Tilt Down



PC Board Test

Step 5: Press & hold Tilt Up button for 5 seconds.

Does the **foot section** move up, then stop & "beep"?
If **YES**, go to Step 6.
If **NO**, replace PC Board*.

PC Board Test

Step 6: Press & hold Tilt Down button for 5 seconds.

Does the **foot section** move down, then stop & "beep"?
If **YES**, PC Board is OK.
If **NO**, replace PC Board*.

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Component Testing & Repair

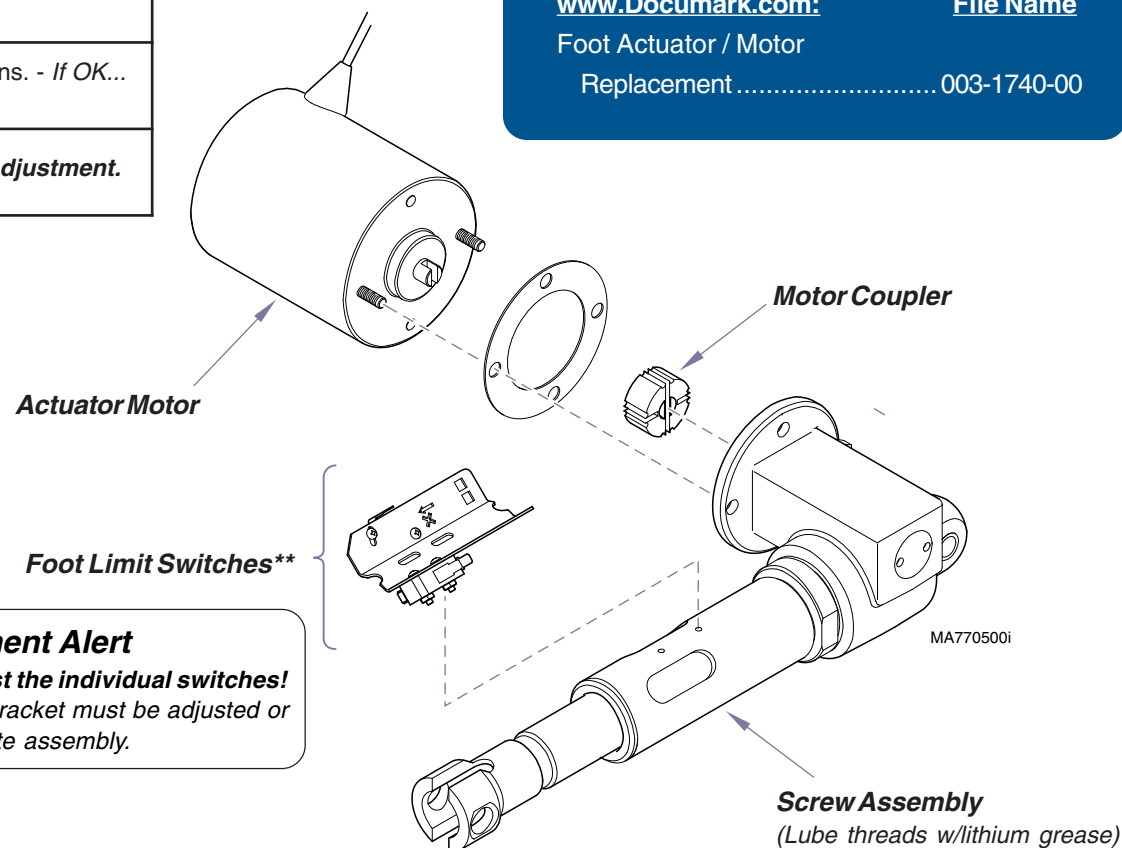
Foot Actuator / Limit Switches

Isolating a Malfunction

This illustration shows the foot limit switches and the three serviceable components of the foot actuator. Use the table below to isolate the malfunction.

Problem	Required Action
Motor runs, but makes grinding noise.	Clean / lube actuator threads. Replace actuator if necessary*.
Motor runs, but table does not move.	Inspect / replace motor coupler*.
Motor does not run.	Check limit switch wire connections. - If OK... Perform Actuator Motor Test .
Actuator runs past max / min position.	Perform Limit Switch Bracket Adjustment .

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.



** Equipment Alert

Do not adjust the individual switches!

The limit switches & bracket must be adjusted or replaced as a complete assembly.

Foot Actuator / Limit Switches Go To Page:

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File Name

Foot Actuator / Motor

Replacement..... 003-1740-00

Models:
Serial Numbers:

ALL

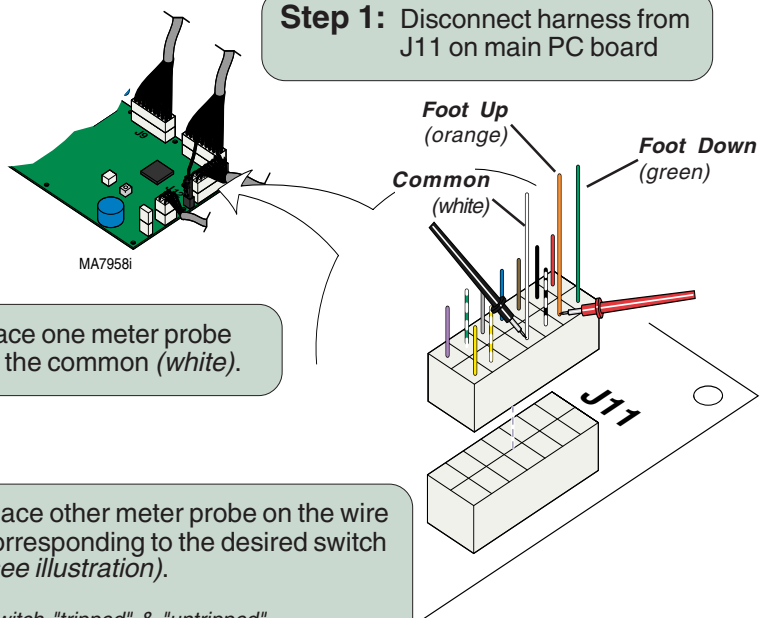
**Foot Actuator /
Limit Switches**

B-19

Component Testing & Repair

Foot Actuator / Limit Switch - continued

PC Board Harness Test



Step 1: Disconnect harness from J11 on main PC board

Step 2: Place one meter probe on the common (*white*).

Step 3: Place other meter probe on the wire corresponding to the desired switch (*see illustration*).

Note: Check switch "tripped" & "untripped".

With switch "tripped"...

Meter Reading Req'd Action

OL	Perform Limit Switch Harness Test
less than 10 Ω	Limit switch / harness - OK Perform Actuator Motor Test

With switch "untripped"...

less than 10 Ω	Perform Limit Switch Harness Test
OL	Limit switch / harness - OK Perform Actuator Motor Test

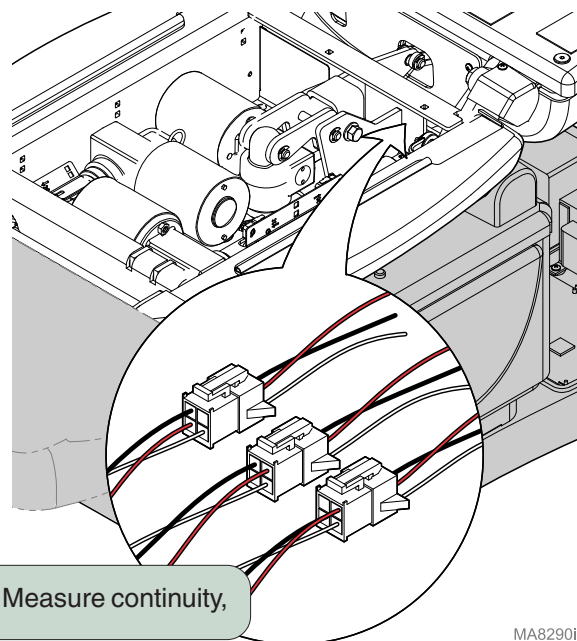
Refer To:

Actuator Motor Test B-21

Go To Page:

Limit Switch Harness Test

Step 1: Unplug the appropriate limit switch harness.



Step 2: Measure continuity,

Meter reading should be...

Actuator Full Up	White to Black - Open White to Red - Closed
Actuator Full Down	White to Black - Closed White to Red - Open
Actuator Midway Point	White to Black - Closed White to Red - Closed

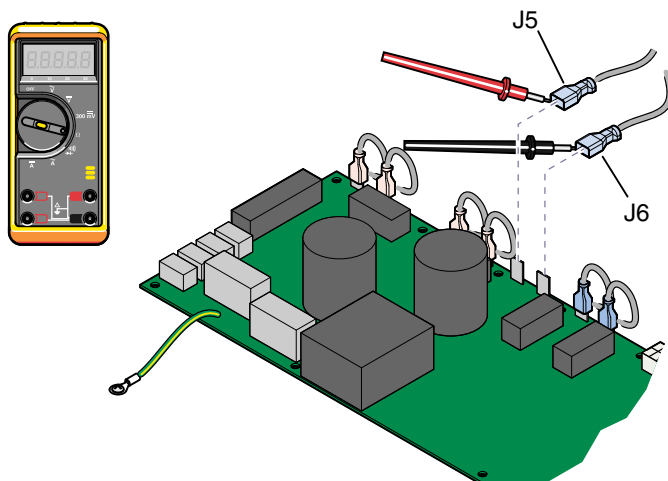
Component Testing & Repair

Foot Actuator / Limit Switches - continued

Actuator Motor Test

Actuator Motor Test

Step 1: Tag / disconnect foot actuator wires (J5 & J6).



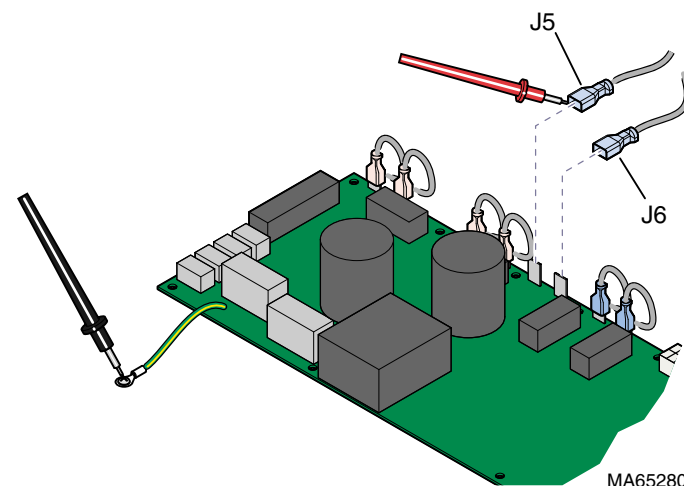
Actuator Motor Test

Step 2: Place meter probes on actuator wires. Check meter reading.

Meter Reading	Status	Required Action
1 to 10 Ω		Actuator motor - OK. Perform Motor Ground Test
OL -or- less than 1 Ω		Replace motor*.

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Motor Ground Test



Motor Ground Test

Step 1: Place one meter probe on actuator wire (J5). Place other meter probe on PC board ground wire. Check meter reading. (Repeat for J6)

Meter Reading	Status	Required Action
OL -or- more than 1 M Ω		Motor harness - OK. Perform PC Board Test
less than 1 Ω		Replace motor*.

Go To Page:

Refer To:

PC Board Test B-22

www.Documark.com:

File Name

Foot Actuator / Motor

Replacement 003-1740-00

Models:
Serial Numbers:

ALL

Foot Actuator /
Limit Switches

B-21

Component Testing & Repair

Foot Actuator / Limit Switches - continued

PC Board Test

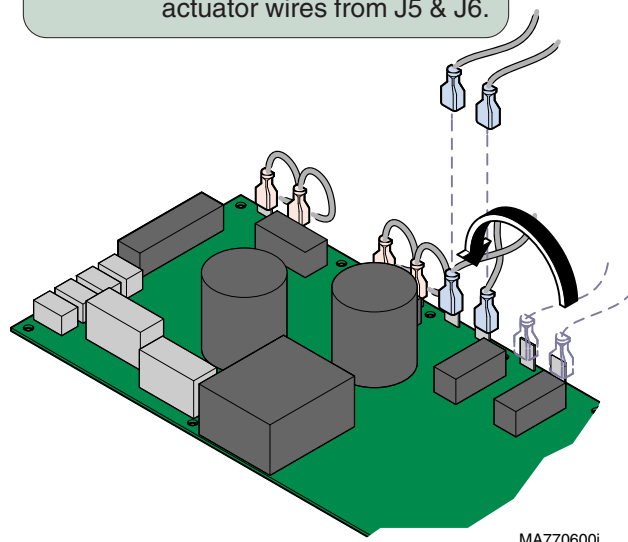
PC Board Test

Step 1: This test cannot be performed with the foot function in the max. or min. position.

If necessary, reposition the foot section.
Refer to: *Tilt Actuator - PC Board Test*

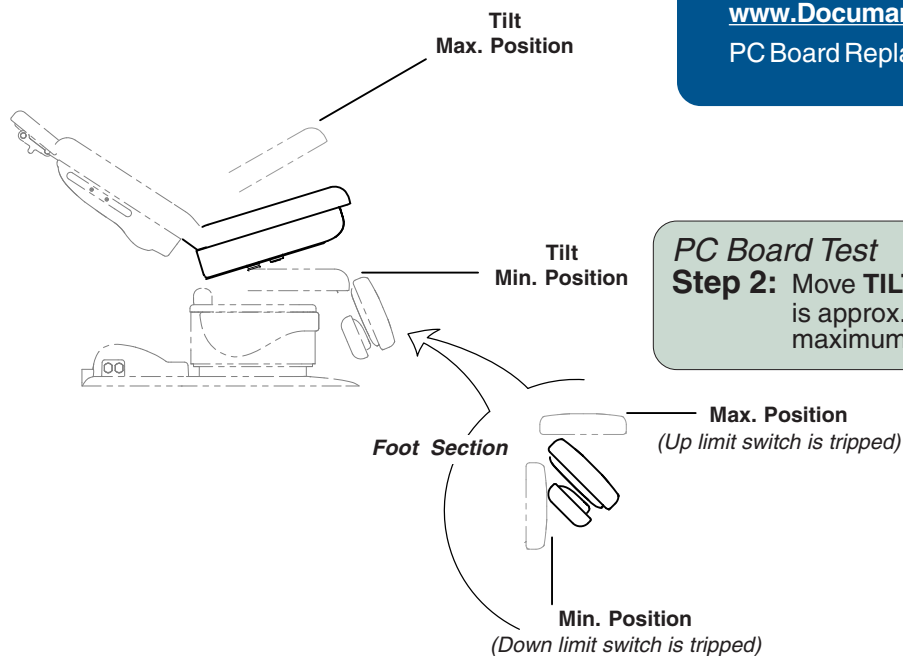
PC Board Test

Step 3: Tag / disconnect foot actuator wires from J5 & J6.



PC Board Test

Step 4: Move brown wire from J7 to J6.
Move blue wire from J8 to J5.



www.Documark.com:

PC Board Replacement 003-1490-00

Go To Page:

PC Board Test

Step 2: Move **TILT** function so that it is approx. halfway between its maximum & minimum positions.

Equipment Alert
The foot limit switches will not stop movement during this test.
Do not run past max. / min. positions.

PC Board Test

Step 5: Press & hold Foot Up button for 5 seconds.

Does the **tilt function** move up, then stop & "beep"?
If **YES**, go to Step 6.
If **NO**, replace PC Board*.

PC Board Test

Step 6: Press & hold Foot Down button for 5 seconds.

Does the **tilt function** move down, then stop & "beep"?
If **YES**, PC Board is OK.
If **NO**, replace PC Board*.

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.



Component Testing & Repair

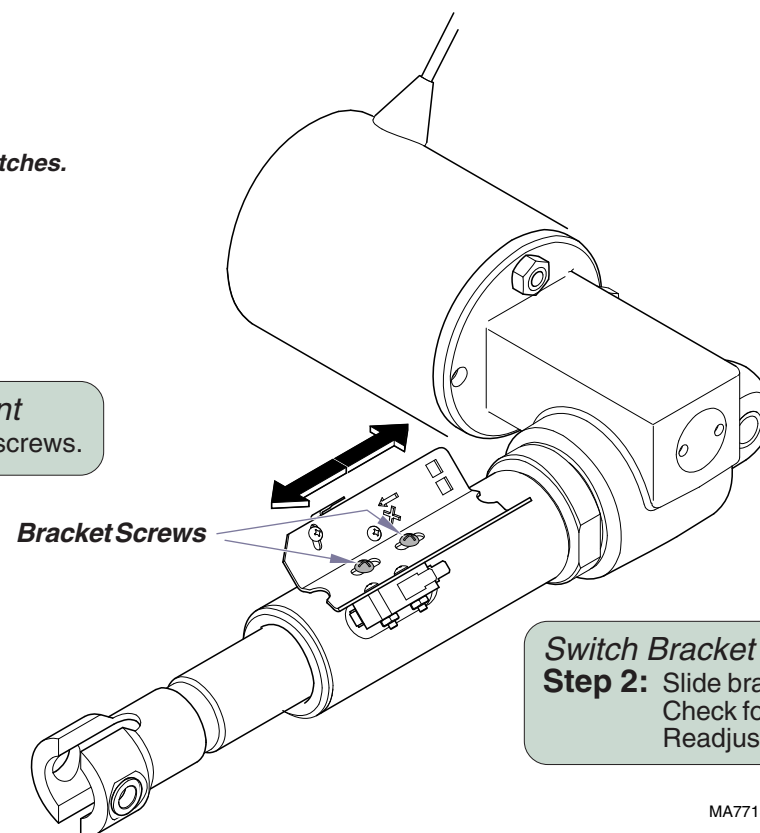
Foot Actuator / Limit Switches - continued

Limit Switch Bracket Adjustment

The foot limit switch adjustment is critical to ensure proper operation (tolerance: 0.030").
Do not attempt to adjust the individual switches.

Switch Bracket Adjustment

Step 1: Loosen two bracket screws.



Switch Bracket Adjustment

Step 2: Slide bracket assembly forward / backward. Check for proper operation. Readjust as necessary.

MA771300i

Component Testing & Repair

Foot Extension / Limit Switch

Latch Inspection



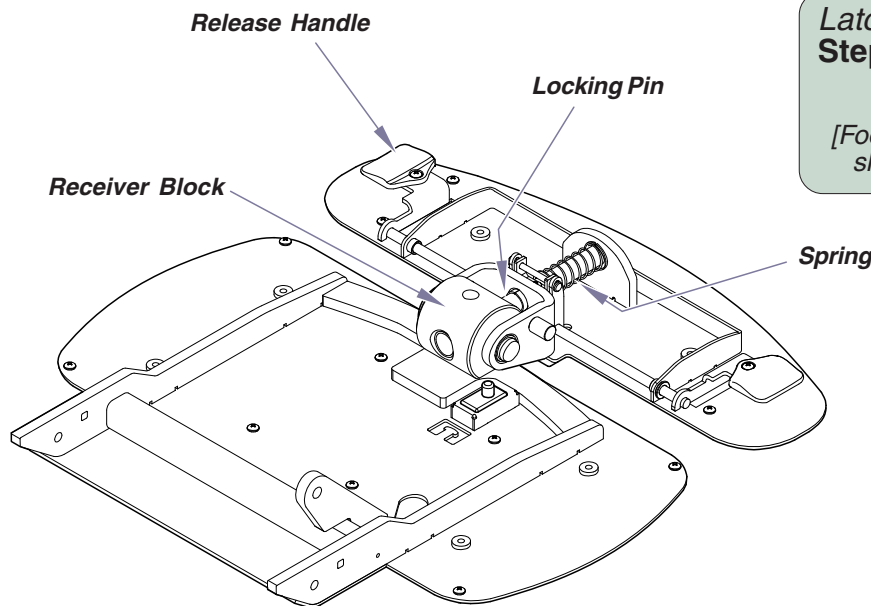
Equipment Alert

The weight capacity of the foot extension is 120 lbs (54 kg). Exceeding this limit may result in equipment damage.

Latch Inspection

Step 1: Remove foot extension cover (not shown).
Squeeze release handle(s).

[Linkage should retract locking pin,
disengaging it from the receiver block]



Latch Inspection

Step 2: Move the foot extension to both locking positions (stowed / extended).

[Foot extension should move freely. Spring tension should engage the locking pin in each position]

Latch Inspection

Step 3: Remove any debris restricting movement.
Tighten any loose fasteners.
Replace any damaged components.

Foot Extension / Limit Switch

Go To Page:

Latch Inspection B-24

Limit Switch / Harness Test B-25

Access Procedures (Cover Removal) C-1

Wiring Diagrams D-1

Exploded View / Part Numbers:

Foot Extension (incl. latch) E-7

Leg Section (incl. limit switch) E-8

Component Testing & Repair

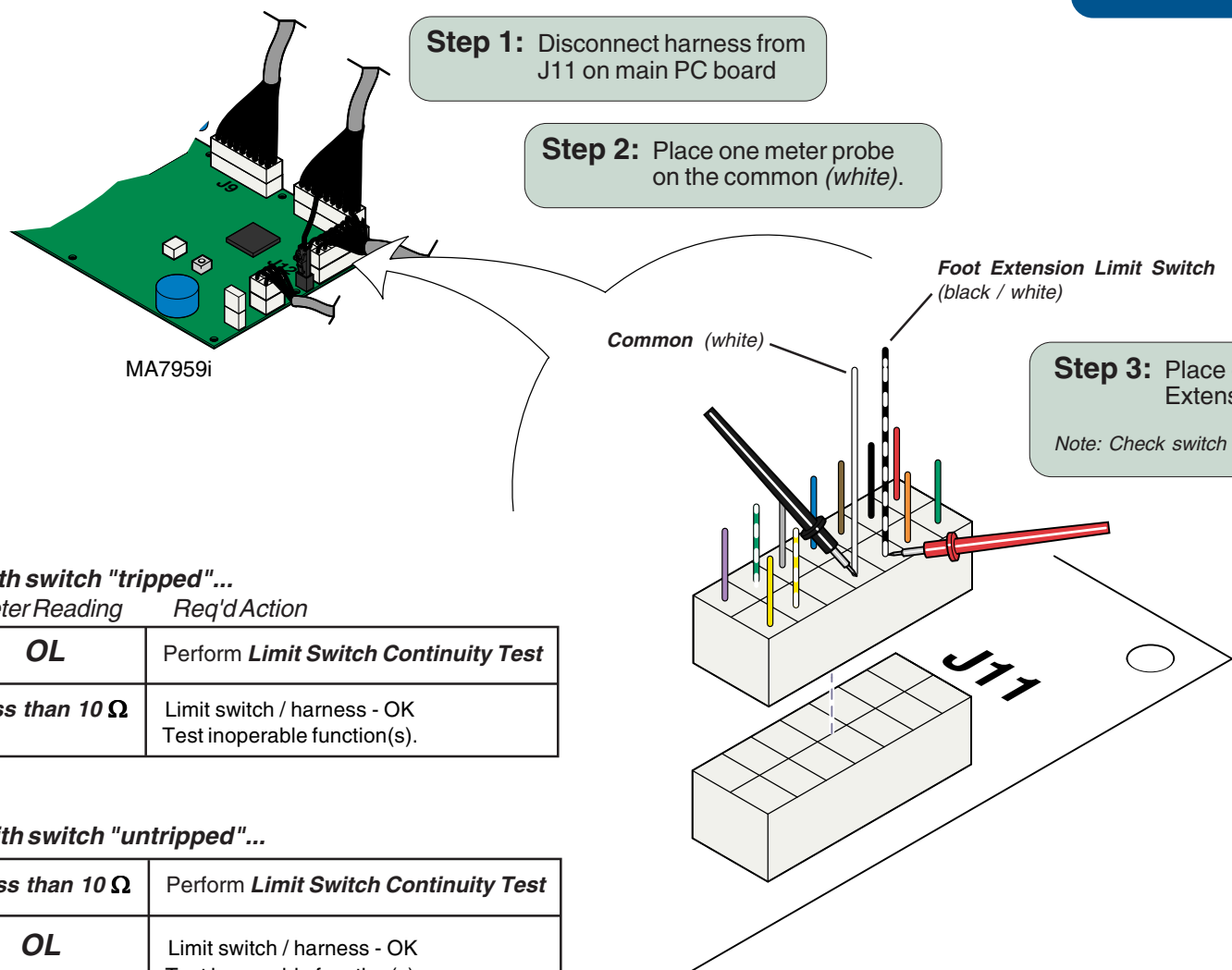
Foot Extension / Limit Switch - continued

Refer To:

Go To Page:

Limit Switch Continuity Test B-26

Limit Switch / Harness Test



With switch "tripped"...

Meter Reading Req'd Action

OL	Perform Limit Switch Continuity Test
less than 10 Ω	Limit switch / harness - OK Test inoperable function(s).

With switch "untripped"...

less than 10 Ω	Perform Limit Switch Continuity Test
OL	Limit switch / harness - OK Test inoperable function(s).

Models:
Serial Numbers:

ALL

Foot Extension /
Limit Switch

B-25

Component Testing & Repair

Foot Extension / Limit Switch - continued

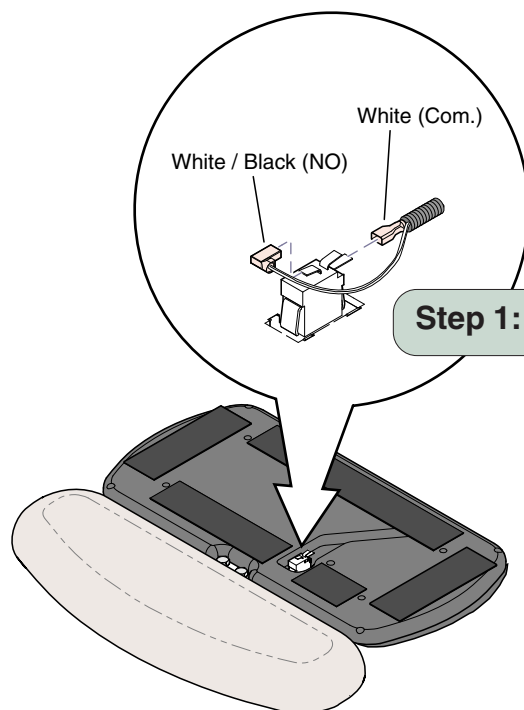
Limit Switch Continuity Test

Before performing test...

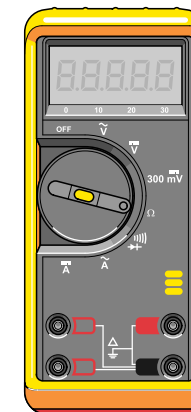
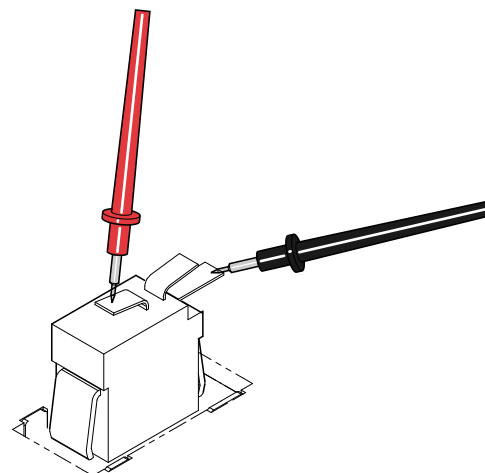
Inspect limit switch wire connections

Tighten any loose connections.
Replace any damaged wire harnesses

1st ✓



Step 1: Tag / disconnect wires.



MA771400i

Step 2: Place meter probes on **COM** and **NO** terminals.

Note: Check switch 'tripped' and 'untripped'.

With switch 'tripped'...

Meter Reading	Status	Required Action
OL		Replace switch
less than 5 Ω		Limit switch - OK

With switch 'untripped'...

Meter Reading	Status	Required Action
OL		Limit switch - OK
less than 5 Ω		Replace switch

Component Testing & Repair

Gas Springs

Isolating a Malfunction

Problem

Required Action

Squeaking, grinding sound coming from pivot joints.	Clean / lube pivot joints. (lubricant: lithium grease)
Diminished lifting capacity. (Base actuator - OK)	Replace gas spring(s)*.

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Gas Springs

Go To Page:

Isolating a Malfunction B-27

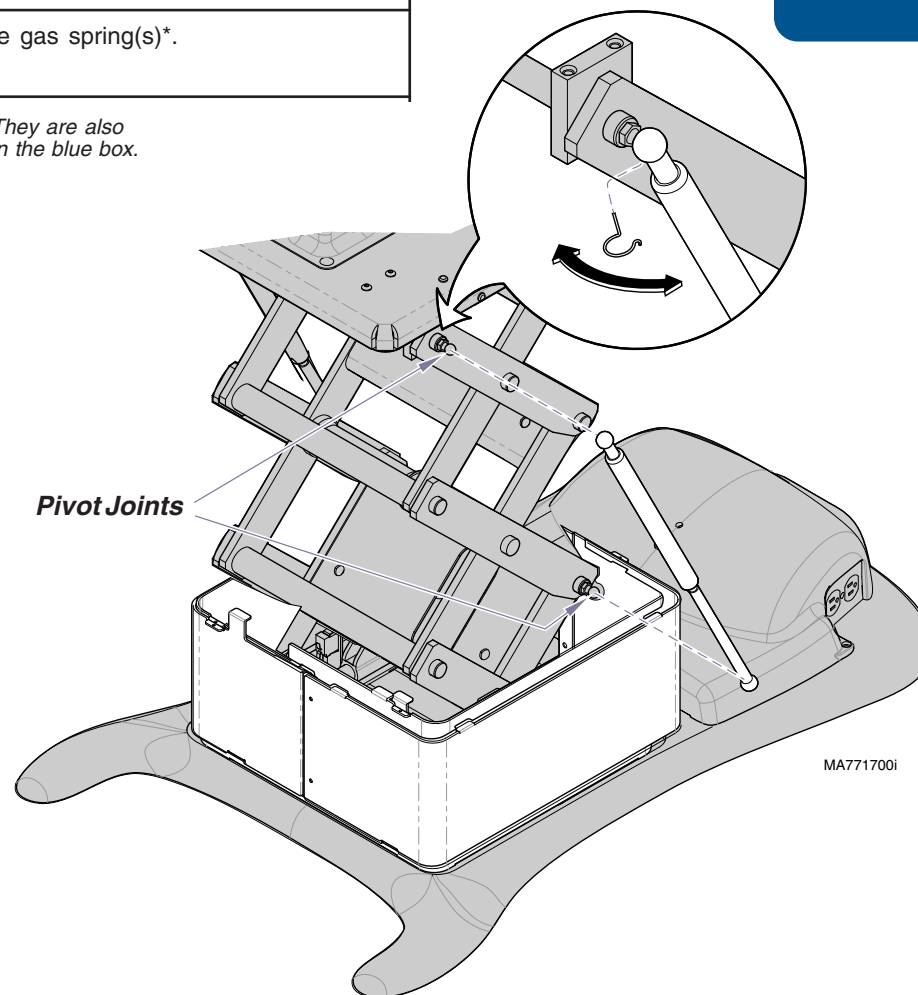
Access Procedures (Cover Removal) C-1

Exploded View / Part Numbers E-14

www.Documark.com:

File Name

Gas Spring Replacement 003-1741-00



Models:
Serial Numbers:

ALL

Gas Springs

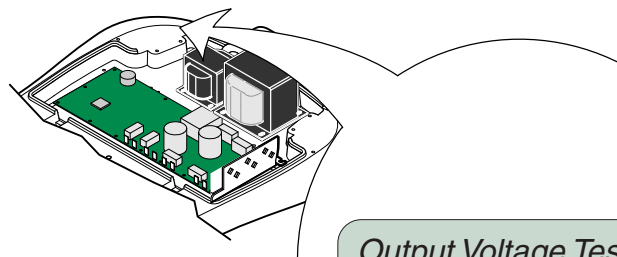
B-27

Component Testing & Repair

Isolation Transformer / Chair Receptacles

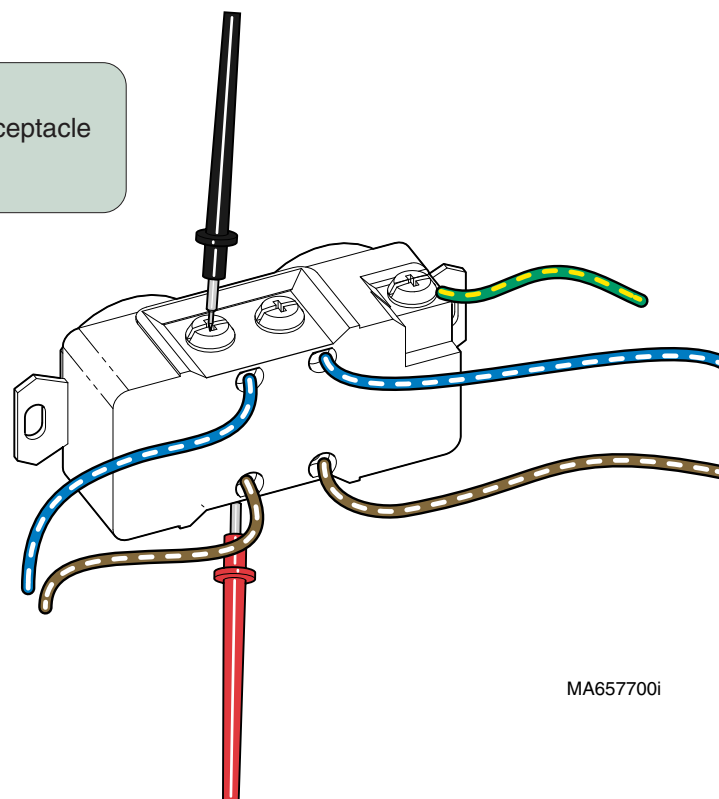
[NOTE: This transformer affects chair receptacles only].

Output Voltage Test



Output Voltage Test

Step 1: Place meter probes on receptacle screws (top & bottom). Check meter reading.



MA657700i

Meter Reading	Status	Required Action
120 (± 12) VAC		Transformer - OK Replace receptacle(s).
less than 108 VAC		If table power light is ON, replace transformer. If not, check supply voltage.

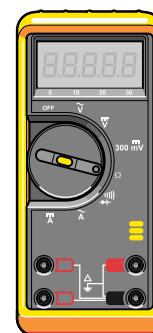
Component Testing & Repair

Main System Transformer

[NOTE: This transformer affects all table functions (except table receptacles)].

Output Voltage Test

Output Voltage Test
Step 1: Set meter to 200 VAC.



Main System Transformer

Go To Page:

Output Voltage Test B-29

Resistance Test B-30

Access Procedures (Cover Removal) C-1

Wiring Diagrams D-1

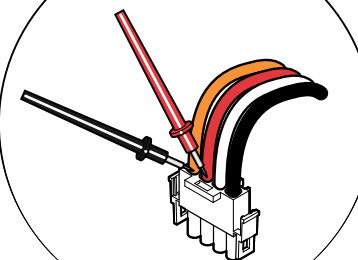
Exploded View / Part Numbers:

Standard Base E-15

Rotational Base E-16

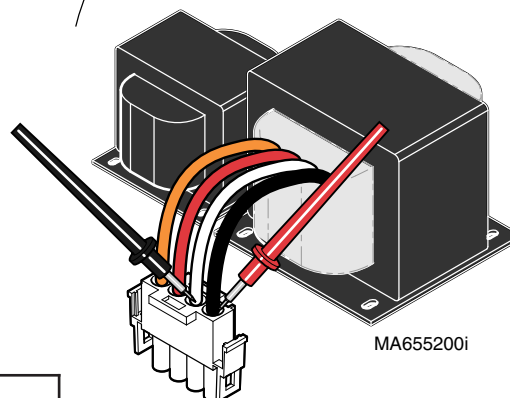
Output Voltage Test

Step 3: Place meter probes on red and orange wires of transformer connector. Check meter reading.



Output Voltage Test

Step 2: Place meter probes on black and white wires of transformer connector. Check meter reading.



[Black & White Wires]
Meter Reading

Status

Required Action

42 to 58 VAC		Transformer - OK
less than 42 VAC more than 58 VAC		Perform Resistance Test

[Red & Orange Wires]
Meter Reading

Status

Required Action

23 to 43 VAC		Transformer - OK
less than 23 VAC		Perform Resistance Test

Models:
Serial Numbers:

ALL

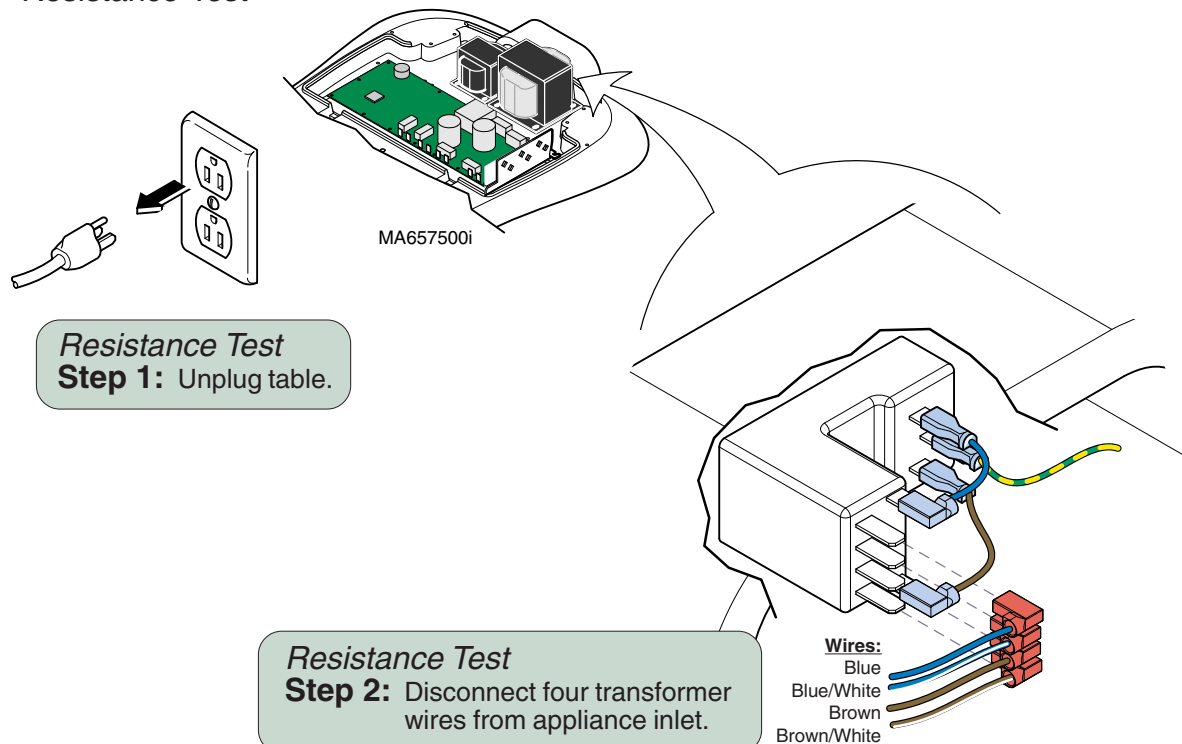
Main System
Transformer

B-29

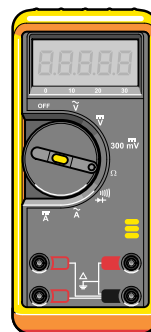
Component Testing & Repair

Main System Transformer - continued

Resistance Test



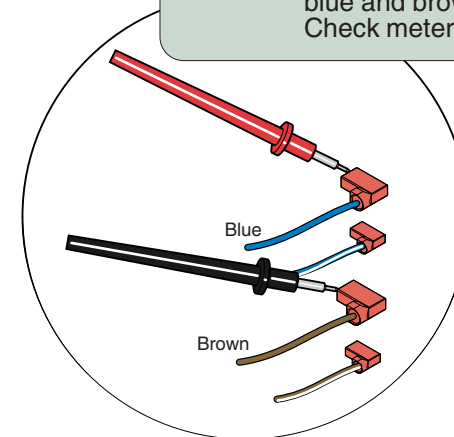
Resistance Test Step 3: Set meter to 200 Ω .



Meter Reading	Status	Required Action
less than 10 Ω		Transformer - OK
OL -or- more than 10 Ω		Replace transformer.

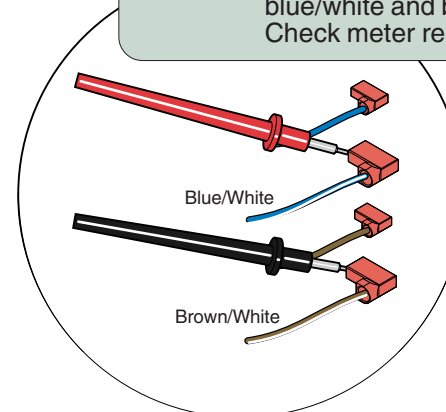
Resistance Test

Step 5: Place meter probes on blue and brown wires. Check meter reading.



Resistance Test

Step 4: Place meter probes on blue/white and brown/white wires. Check meter reading.



Component Testing & Repair

Position Sensors

Testing

Step 1: Verify position sensor shoulder bolts are tight (50 ft-lbs).

Note: This step does not apply to the Base position sensor.

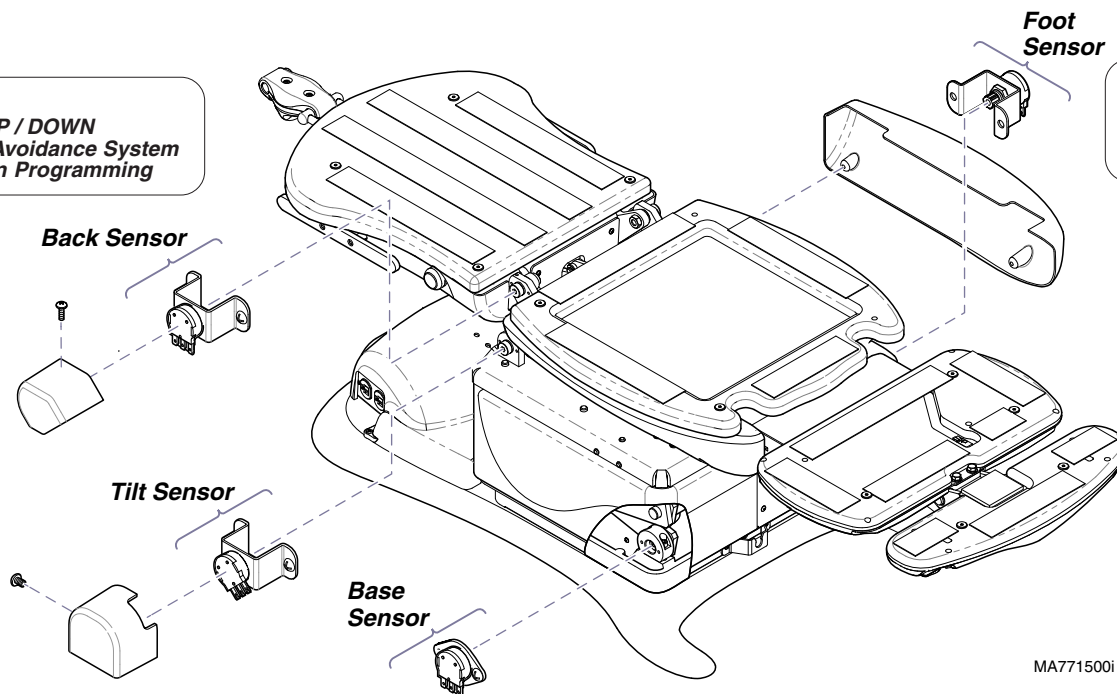
Step 2: Perform **Output Voltage Test (at Sensor)**.

Note: This test must *always* be performed first.
The results from this test determine the next required action.

Location

Back Sensor

Affected Functions: **Back UP / DOWN**
Crash Avoidance System
Position Programming



Foot Sensor

Foot Sensor

Affected Functions: **Foot UP / DOWN**
Crash Avoidance System
Position Programming

Back Sensor

Tilt Sensor

Base Sensor

Tilt Sensor

Affected Functions: **Tilt UP / DOWN**
Crash Avoidance System
Position Programming

Base Sensor

Affected Functions: **Base UP / DOWN**
Crash Avoidance System
Position Programming
"Home" Function

MA771500i

Position Sensors

Go To Page:

Testing	B-31
Location	B-31
Output Voltage Test (at Sensor)	B-32
Access Procedures (Cover Removal)	C-1
Wiring Diagrams	D-1
Exploded View / Part Numbers	E-18

Models:
Serial Numbers:

ALL

Position Sensors

B-31

Component Testing & Repair

Position Sensors - continued

Output Voltage Test (at Sensor)

Note: If Tilt is stuck in Down position...

Disconnect the White and Black wires at J7 & J8 on Main PC Board. Connect Black wire to J7 and White wire to J8. Perform Output Voltage Test on Tilt Up function by pressing the Tilt DOWN button.



Caution: Do not run Tilt Up function beyond the halfway position.

Reconnect White wire to J7 and Black wire to J8. Perform Output Voltage Test on the Tilt Down function.

Go to:

Output Voltage Test (at PC Board) B-33

Supply Voltage Test (at Sensor) B-34

Go To Page:

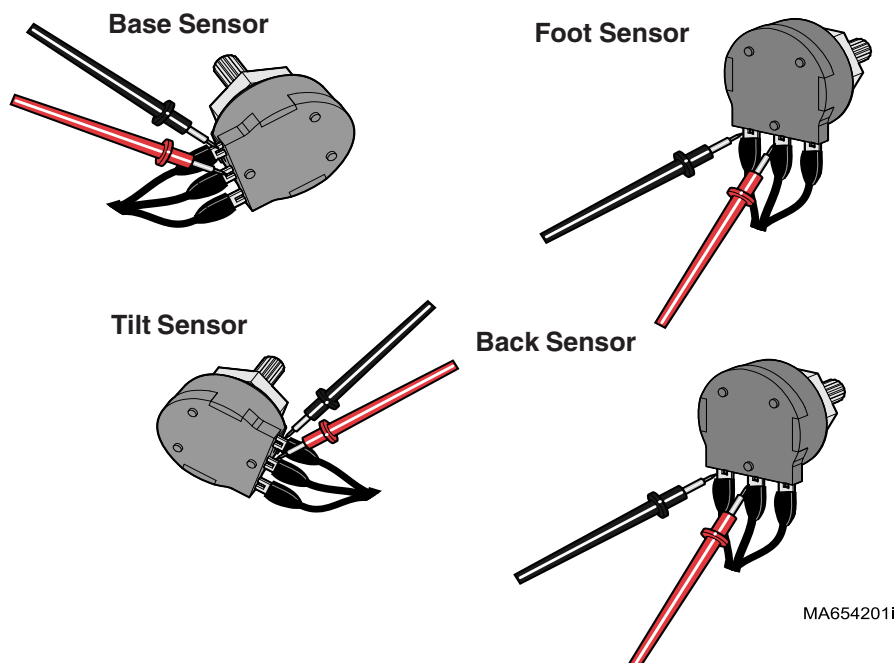
Output Voltage Test

Step 1: Set meter to **20 VDC**. Place meter probes on proper terminals.
(See appropriate illustration)

Output Voltage Test

Step 2: Run desired function up & down.
Watch meter reading as function moves.

Note: Each sensor has a different voltage range.



Meter Reading	Position Sensor Status	Required Action
Voltage steadily increases / decreases as function moves up / down		Perform Output Voltage Test (at PC Board)
Voltage does not change, or changes erratically as function moves up / down		Perform Supply Voltage Test (at Sensor)

Component Testing & Repair

Position Sensors - continued

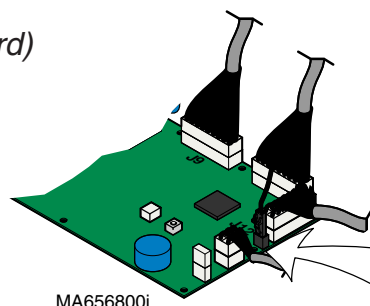
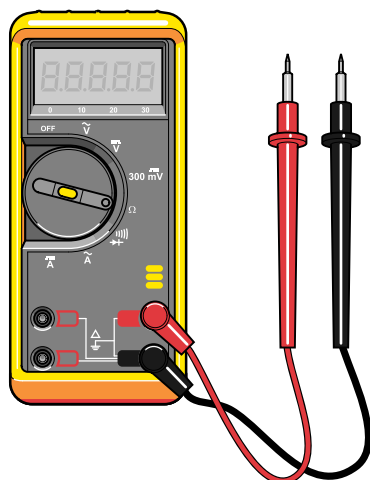
Output Voltage Test (at PC Board)

www.Documark.com

Go To Page:

PC Board Replacement 003-1490-00

Output Voltage Test Step 1: Set meter to VDC.

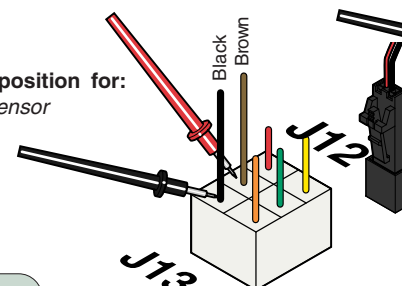


Output Voltage Test Step 2: Place meter probes on proper wires. (See appropriate illustration)

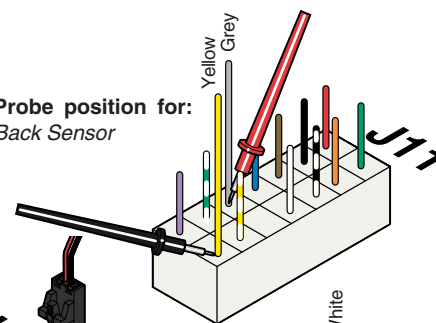
Output Voltage Test Step 3: Run desired function up & down. Watch meter reading as function moves.

Note: Each sensor has a different voltage range.

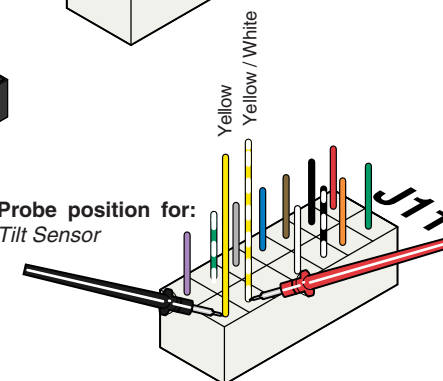
Probe position for:
Base Sensor



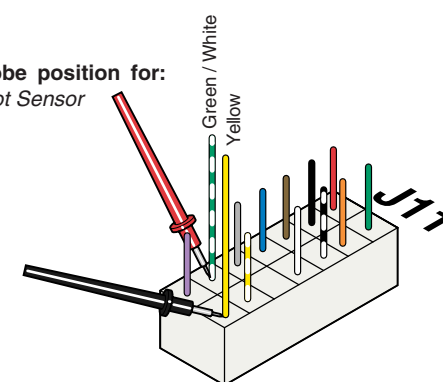
Probe position for:
Back Sensor



Probe position for:
Tilt Sensor



Probe position for:
Foot Sensor



Meter Reading	PC Board Status	Required Action
Voltage does not change, or changes erratically as function moves up / down		Check wire harness (connections, damage, etc)
Voltage steadily increases / decreases as function moves up / down		Replace PC Board*.

* **Before replacing PC board**, be sure shoulder bolt at the position sensor pivot point is tight. If bolt is loose, tighten it, then recalibrate PC board & check for proper operation.

Models:
Serial Numbers:

ALL

Position Sensors

B-33

Component Testing & Repair

Position Sensors - continued

Supply Voltage Test (at Sensor)

Go To:

Supply Voltage Test (at PC Board) B-35

Position Sensor Adjustment B-36

www.Documark.com:

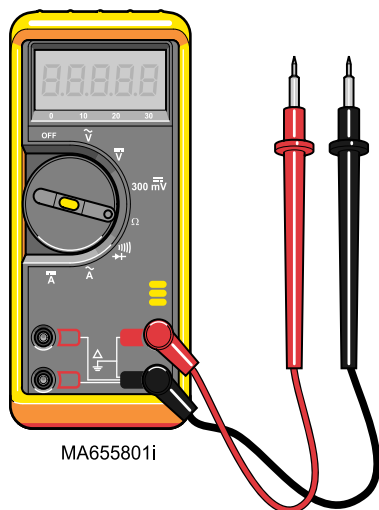
Go To Page:

File Name

Position Sensor Replacement 003-1473-00

Supply Voltage Test

Step 1: Set meter to 20 VDC.



MA655801i

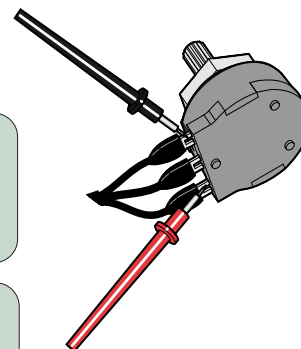
Supply Voltage Test

Step 2: Place meter probes on proper terminals.
(See appropriate illustration)
Check meter reading.

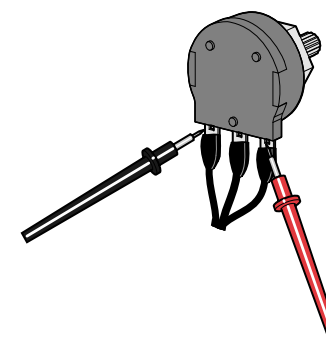
Supply Voltage Test

Step 3: With meter probes in same position,
run BASE function to max / min. position.
Check reading as function moves.

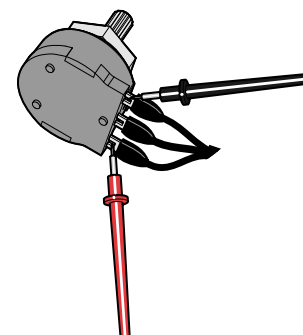
Base Sensor



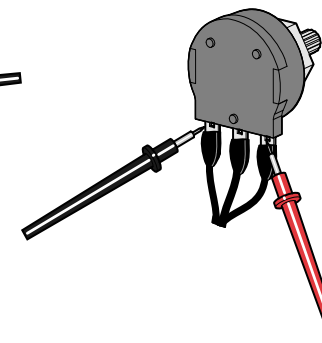
Foot Sensor



Tilt Sensor



Back Sensor



Meter Reading	Position Sensor Status	Required Action
2 to 4 VDC		1. Position Sensor Adjustment 2. Replace position sensor*.
less than 2 VDC more than 4 VDC		Perform Supply Voltage Test (at PC Board)
Reading changes erratically as BASE moves up / down		Perform Supply Voltage Test (at PC Board)

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Component Testing & Repair

Position Sensors - continued

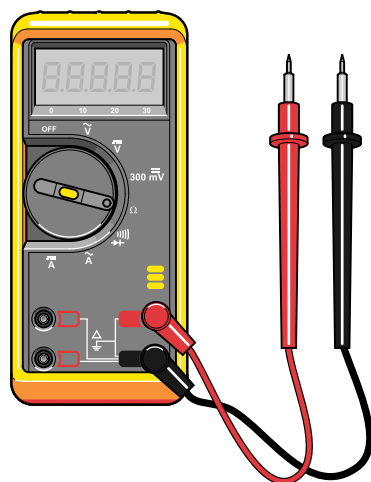
Supply Voltage Test (at PC Board)

www.Documark.com:

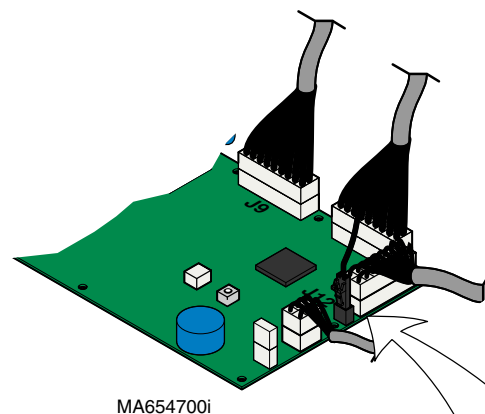
Go To Page:

PC Board Replacement 003-1490-00

Supply Voltage Test
Step 1: Set meter to 20 VDC .



Supply Voltage Test
Step 2: Place meter probes on proper wires.
 (See appropriate illustration)

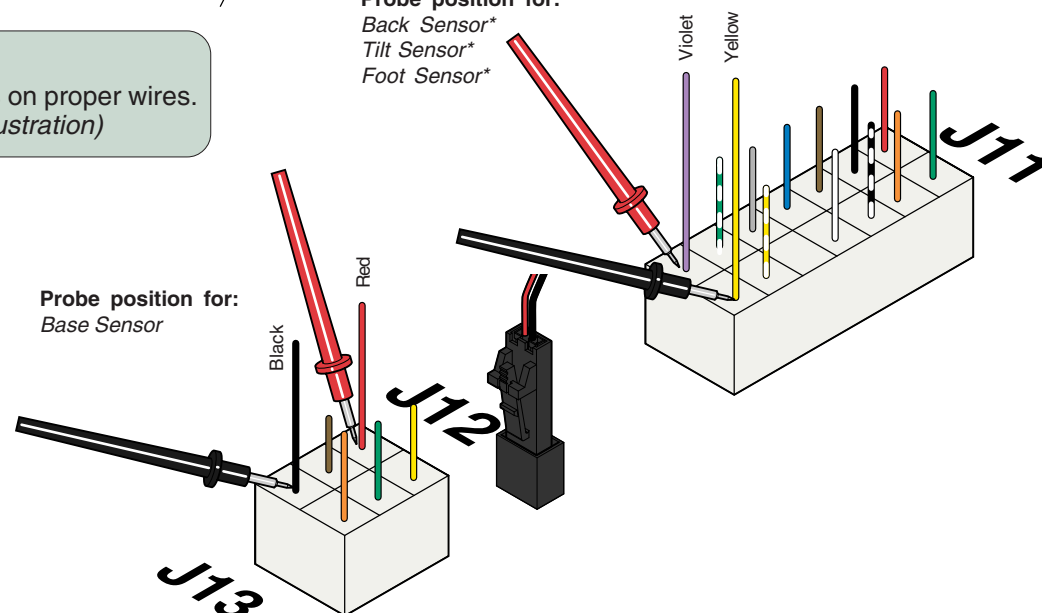


*** Attention (Back / Tilt / Foot only)**
 If initial reading is less than 2VDC or more than 4VDC, unplug J11 connector & check meter reading at pins on PC board (same location).

If reading is:
 2 to 4 VDC Replace sensor wire harness.
 < 2 VDC Replace PC board.
 > 4 VDC Replace PC board

Probe position for:

Back Sensor*
 Tilt Sensor*
 Foot Sensor*



Meter Reading	PC Board Status	Required Action
2 to 4 VDC		Replace wire harness between: (sensor & junction board) - or (junction board & PC board)
less than 2 VDC more than 4 VDC		Replace PC board*.

*Replacement instructions are provided with the part. They are also available on Documark.com, or by clicking on the link in the blue box.

Models:
 Serial Numbers:

ALL

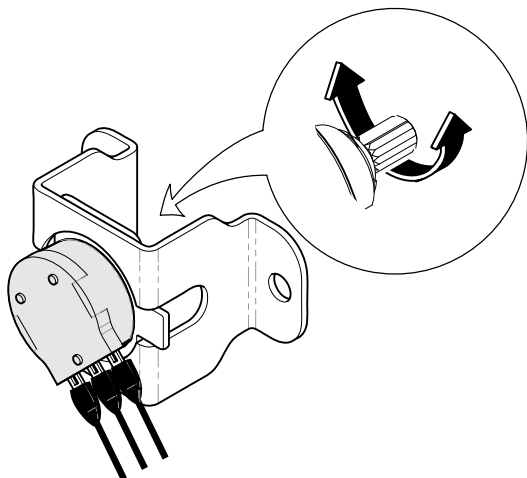
Position Sensors

B-35

Component Testing & Repair

Position Sensors - continued

Adjustment

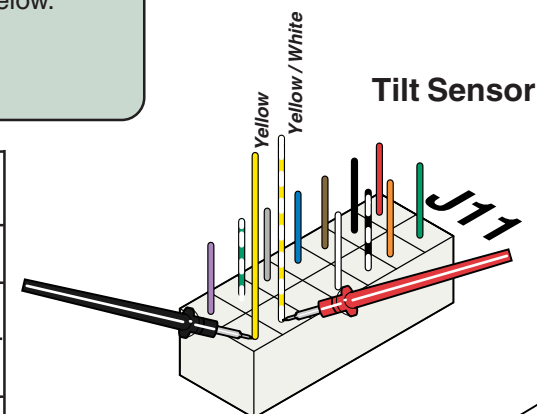


Adjustment

Step 2: Position corresponding table function as indicated (*see Note*).
Turn sensor knob until voltage matches the chart below.

Note: Base / Back / Foot functions: *all the way UP*
Tilt function: *all the way DOWN*

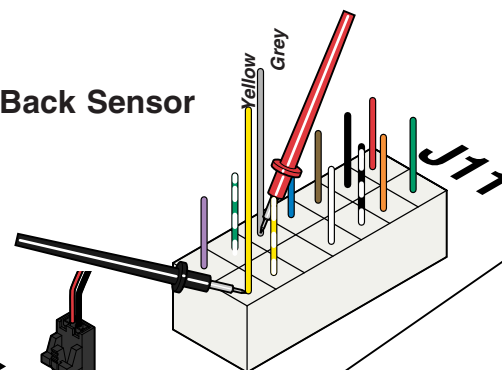
SENSOR	FUNCTION POSITION	VOLTAGE READING
BASE	<i>all the way UP</i>	1.7 to 2.1 VDC
BACK	<i>all the way UP</i>	2.4 to 2.6 VDC
TILT	<i>all the way DOWN</i>	1.8 to 2.1 VDC
FOOT	<i>all the way UP</i>	2.4 to 2.6 VDC



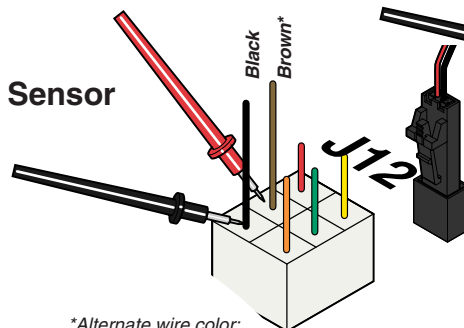
Adjustment

Step 1: Remove main PC board cover.
Place meter probes as shown to test desired sensor.

Back Sensor

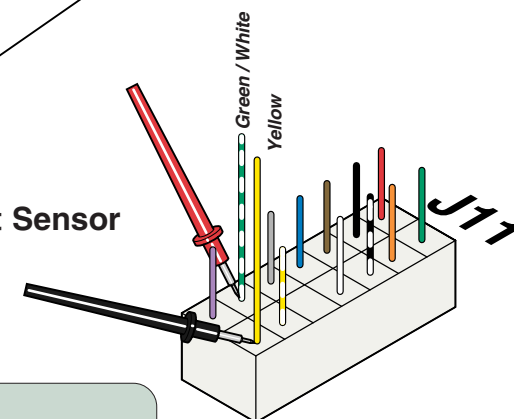


Base Sensor



**Alternate wire color:
Blue*

Foot Sensor



MA8060i

Adjustment

Step 3: Perform PC Board Calibration.
[Refer to **PC Board** in Section B].

Component Testing & Repair

Main PC Board

Error Codes

If the PC Board detects a malfunction in the electrical system, the two Error Code LEDs on the PC Board will flash in a specific sequence to identify the cause of the problem.

How to Display an Error Code

If you suspect a problem with a specific function...

- Remove PC Board cover / locate Error Code LEDs
- Press hand/foot control button for desired function.

If an electrical malfunction is detected:

- Function will stop moving.
- You will hear a "beep".
- Error Code LEDs will flash error code sequence.

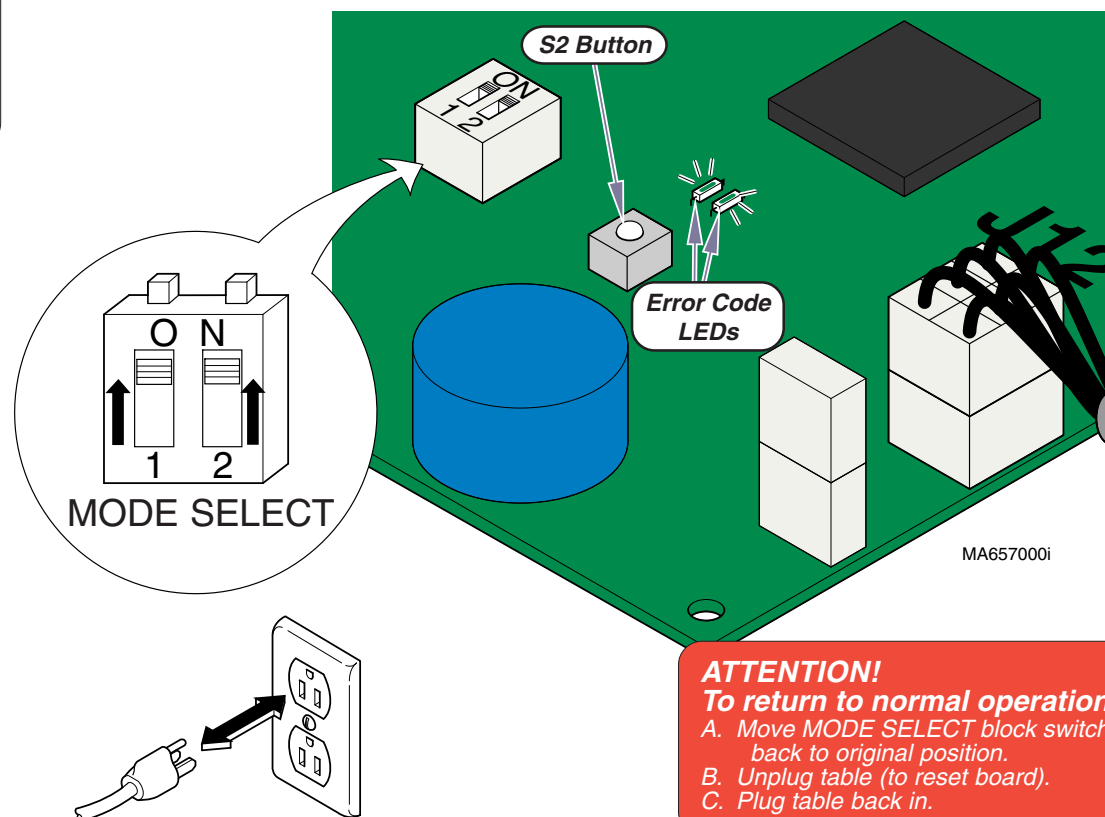
How to Recall Last Five Error Codes

To recall the last five error codes ...

- Move both MODE SELECT switches to ON (up).
- Unplug table (to reset PC Board), then plug back in.
- Press and release S2 Button.
(To repeat error codes, press S2 Button again)
(To erase all error codes from memory, press & hold S2 Button until you hear three "beeps")

If there are error codes stored in the system memory:

- Error Code LEDs will flash the sequence of the five most recent error codes.
(You will hear three "beeps" between each error code)



Main PC Board

[Go To Page:](#)

Error Codes:

How To Display / Recall Last Five B-37

Identification (Error Code Charts) B-38

Calibration Procedure B-39

Child Lock-Out Mode B-40

Access Procedures (Cover Removal) C-1

Wiring Diagrams D-1

Exploded Views / Part Numbers:

Standard Base E-15

Rotational Base E-16

ATTENTION!

To return to normal operation...

- Move MODE SELECT block switches back to original position.
- Unplug table (to reset board).
- Plug table back in.

Models:
Serial Numbers:

ALL

Main PC Board

B-37

Component Testing & Repair

Main PC Board - continued

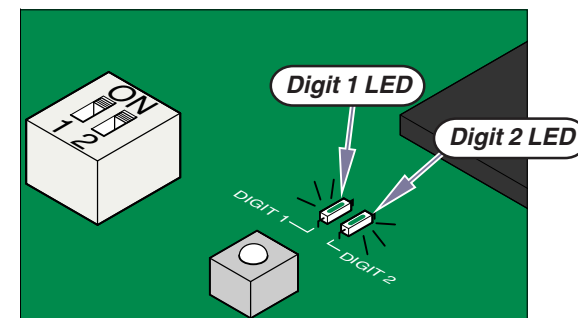
Error Codes - continued

Identification

Digit 1 LED: This LED identifies the function or mode during which the error was detected.
(*ex. Base / Back / Tilt / Foot, Programming Mode, Calibration Mode, Software System*)
Record the number of times this LED flashes before Digit 2 LED begins to flash.

Digit 2 LED: This LED identifies cause of the error. (*ex. actuator motor overload, treatment pan out, etc.*)
Record the number of times this LED flashes before Digit 1 LED flashes again.

Locate the two digit error code in the charts below:



MA657200i

(# of flashes) Digit 1 LED	Table Function	(# of flashes) Digit 2 LED	Cause of the Error
1	BASE	1	Function in potential crash position
2	BACK	2	Actuator motor run time exceeded max. limit
3	TILT	3	Position sensor did not move when function was activated
4	FOOT	4	Position sensor reading is out of acceptable range
5	(not used)	5	Actuator motor overload
6	(not used)	6	Function failed during calibration
7	Programming Mode	1	Position Button (1,2,3, or 4) not pressed within 5 seconds.
		2	Incorrect button pressed while in Programming Mode.
		3	Position cannot be programmed (possible "crash" position)

(# of flashes) Digit 1 LED	Table Function	(# of flashes) Digit 2 LED	Cause of the Error
8	Calibration Mode	1	Calibration was not successful
	Error Recall Mode	2	Incorrect button pressed while in Calibration Mode.
		3	Incorrect button pressed while in Error Recall Mode.
9	Software System	1	Software malfunction
		2	Software malfunction
		3	Software malfunction
		4	Foot Down function activated w/ foot extension folded out.
		5	Hand/foot control button pressed while in Child Lock-Out Mode
		9	Disregard this error.

Component Testing & Repair

Main PC Board - continued

Calibration Procedure

During the Calibration Procedure, the PC Board records the voltage readings from the position sensors as *the base, back, and foot* actuators move to their maximum, then minimum positions. Note: The tilt actuator will only move momentarily as it clears the tilt down limit switch and then returns to the minimum position. You will hear a steady pattern of "beeps" as the table moves during calibration. When successful calibration is complete, the table will stop moving and you will hear three "beeps".

You **must** calibrate the PC Board in the following situations:

- After replacing the PC Board
- After replacing any of the position sensors
- After any of the position sensors are removed or disconnected



Equipment Alert

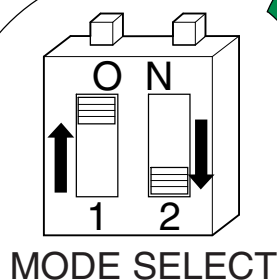
On models with rotational base, remove PC board cover before performing the calibration procedure.

Calibration Procedure

Step 1: Move the foot section to the stowed position.

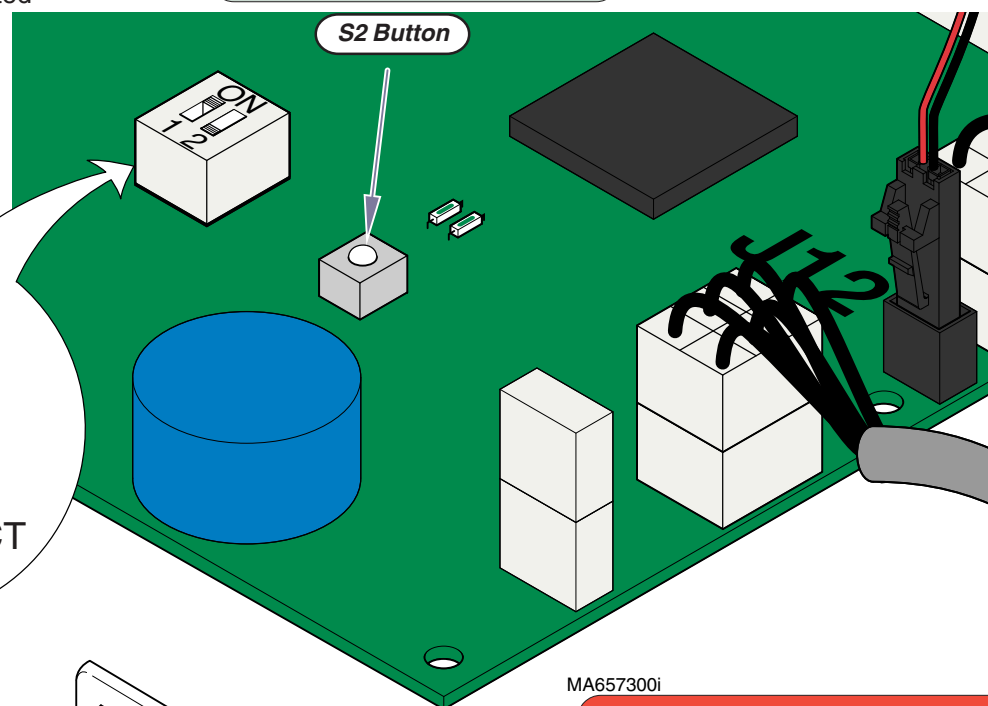
Calibration Procedure

Step 2: Move MODE SELECT switches:
Switch 1 - ON (up)
Switch 2 - off (down)



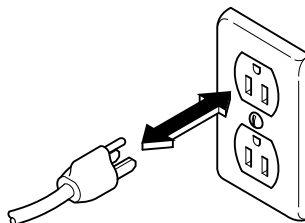
Calibration Procedure

Step 4: Wait 5 seconds, then press S2 Button.



Calibration Procedure

Step 3: Unplug table (to reset PC Board), then plug table back in.



MA657300i

ATTENTION!

To return to normal operation...

- Move MODE SELECT block switches back to original position.
- Unplug table (to reset board).
- Plug table back in.

Models:
Serial Numbers:

ALL

Main PC Board

B-39

Component Testing & Repair

Main PC Board - continued

Child Lock-Out Mode (Programmable models only)

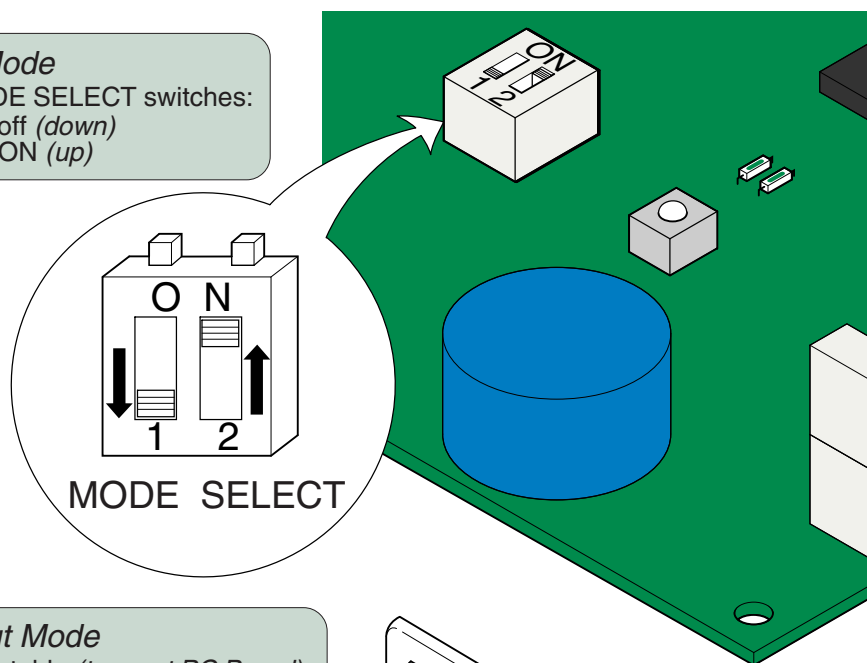
This feature allows the user to lock-out the hand & foot controls to prevent unauthorized use.

[NOTE: When the table is in Child Lock-Out Mode, the Position "4" button cannot be used to store a programmed position.]

Child Lock-Out Mode

Step 1: Move MODE SELECT switches:

- Switch 1 - off (down)
- Switch 2 - ON (up)

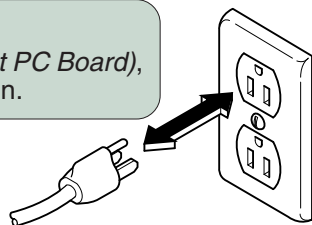


MODE SELECT

MA657400i

Child Lock-Out Mode

Step 2: Unplug table (to reset PC Board), then plug table back in.



Child Lock-Out Mode

Step 3: To lock hand / foot controls...

Press & hold "4" button on hand / foot control.
(After 5 seconds you will hear a "beep".
This indicates the controls are locked)

Note: If a button is pressed while controls are locked,
you will hear a "beep".

To unlock hand / foot controls...

Press & hold "4" button on hand / foot control.
(After 5 seconds you will hear a "beep".
This indicates the controls are unlocked)

Position "4" Button



To deactivate Child Lock-Out Mode...

- A. Move MODE SELECT switches:
Switches 1 & 2 - off (down).
- B. Unplug table (to reset board).
- C. Plug table back in.

Component Testing & Repair

Rotational Base Brake System

Magnet Position Adjustment

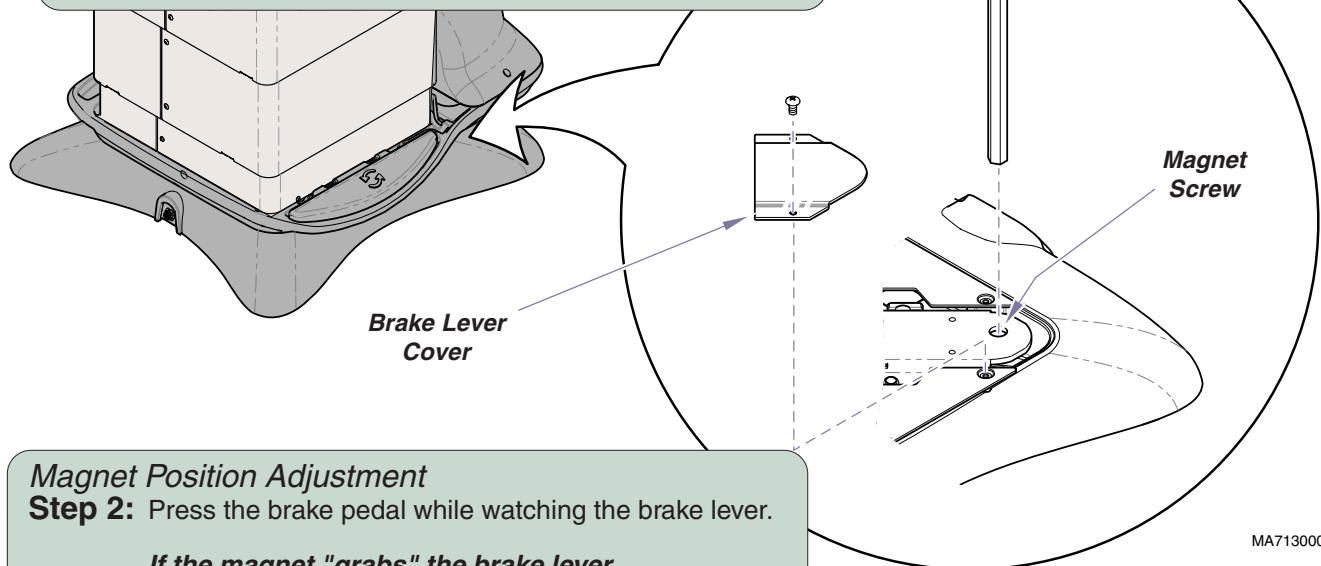
If the rotational brake will not unlock, the electro-magnet may be out of adjustment.

Magnet Position Adjustment

Step 1: Rotate the base to access the brake lever cover.
Remove brake lever cover.

Note: If the brake will not release, the base can still be rotated manually by applying additional force.

The brake lever cover is located between the upper & lower base castings at the patient's left rear corner.



MA7130001

Magnet Position Adjustment

Step 2: Press the brake pedal while watching the brake lever.

If the magnet "grabs" the brake lever...
Tighten the magnet screw 1/4 turn.

If the magnet does not "grab" the brake lever...
Loosen the magnet screw 1/4 turn.

Check for proper operation. Repeat if necessary.

Rotational Base Brake System Go To Page:

Magnet Position Adjustment B-41

Rotational Brake Electrical Test /

Fuse Location B-42

Electro-magnet Test B-43

EMI Filter Board Test B-44

Brake Pedal Switch Access B-45

Separating Upper & Lower

Base Castings B-46

Brake Lever & Electro-magnet

Access B-51

Foot Control Inlet / Power Inlet /

EMI Filter Board Access B-52

Wiring Diagrams D-1

Exploded View / Part Numbers:

Upper Section E-16

Lower Section E-17

Models:
Serial Numbers:

641 (-004 & -005)
All

**Rotational Base
Brake System**

B-41

Component Testing & Repair

Rotational Base Brake System - continued

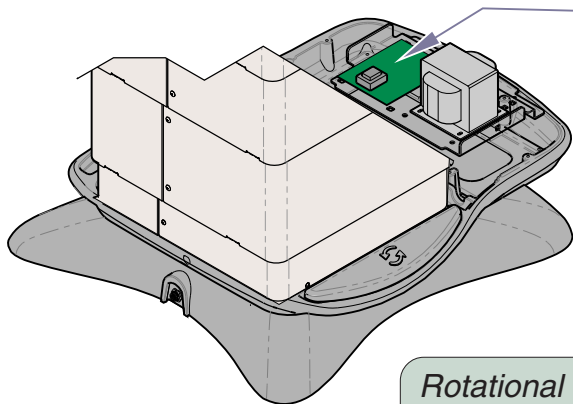
Rotational Brake Electrical Test / Fuse Location

Rotational Brake Electrical Test

Step 1: Remove PC board cover.

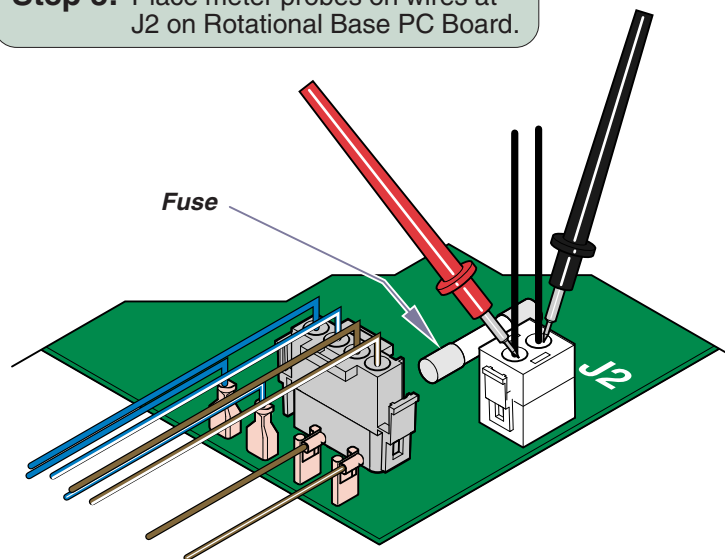
Refer to: Section C - PC Board Cover

Rotational Base
PC Board



Rotational Brake Electrical Test

Step 3: Place meter probes on wires at J2 on Rotational Base PC Board.

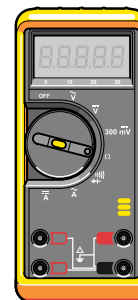


Refer to:

Electro-magnet Test B-43

Access Procedures (Cover Removal) C-1

Go To Page:



Rotational Brake Electrical Test

Step 2: Set meter to VAC.

Rotational Brake Electrical Test

Step 4: Check voltage.

Note: If no voltage is detected, press & release the brake pedal - check voltage again.

Meter Reading	Status	Required Action
15 - 21 VAC		PC board is OK. Perform <i>Electro-magnet Test</i> .
0 VAC		Check Rot. Base PC board fuse. If fuse is OK, replace PC board.

MA713100i

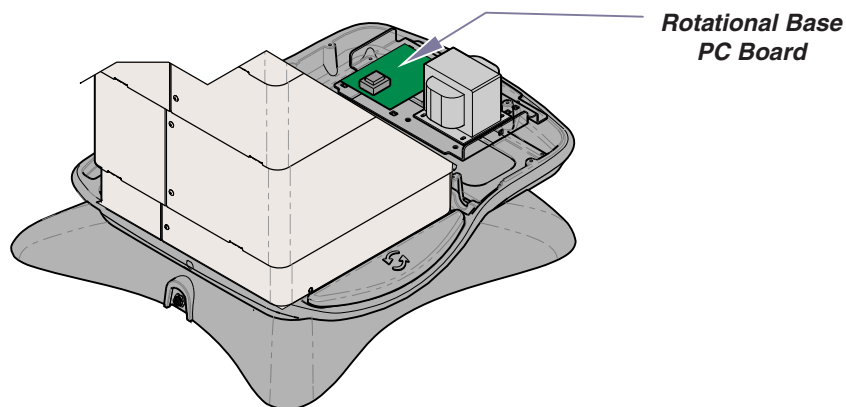
Component Testing & Repair

Rotational Base Brake System - continued

Electro-magnet Test

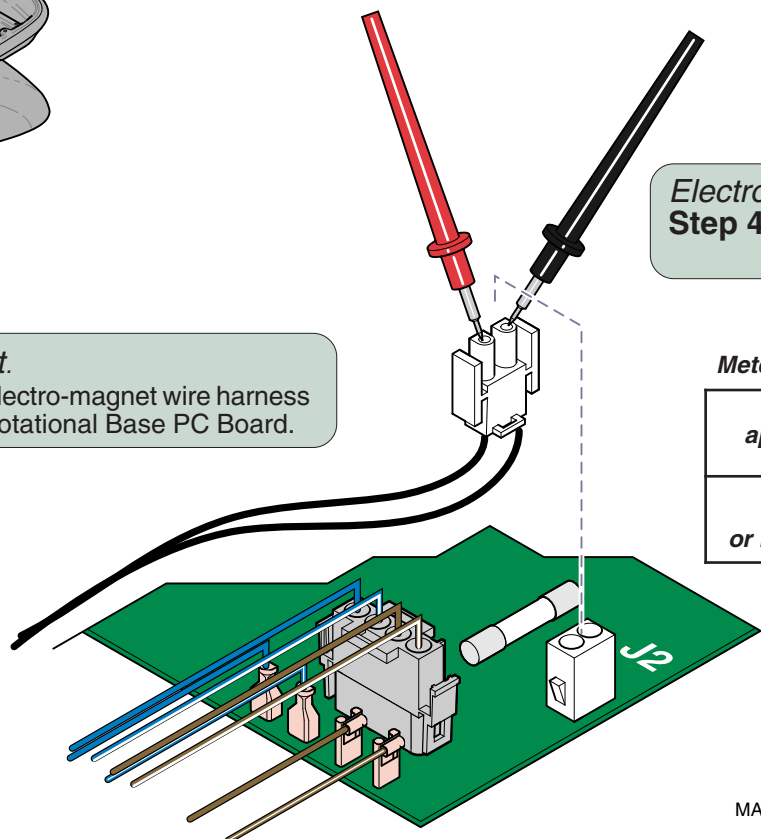
Electro-magnet Test.

Step 1: Remove PC board cover.
Refer to: Section C - PC Board Cover

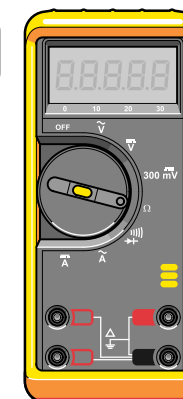


Electro-magnet Test.

Step 3: Disconnect electro-magnet wire harness from J2 on Rotational Base PC Board.



Electro-magnet Test.
Step 2: Set meter to Ω .



Electro-magnet Test.
Step 4: Place meter probes on wire harness.

Meter Reading	Status	Required Action
approx. 10 Ω		Electro-magnet is OK. Check mechanical components.
OL - or less than 5 Ω		Inspect magnet wire harness. If OK, replace electro-magnet.

MA713200i

Models:
Serial Numbers:

641 (-004 & -005)
All

**Rotational Base
Brake System**

B-43

Component Testing & Repair

Rotational Base Brake System - continued

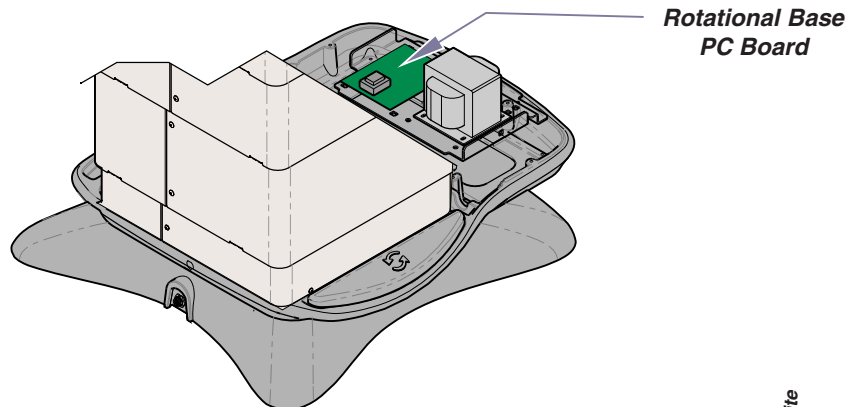
EMI Filter Board Test

This test allows you to check for line voltage coming thru the EMI filter board without separating the upper & lower base castings.

Rotational Brake Electrical Test.

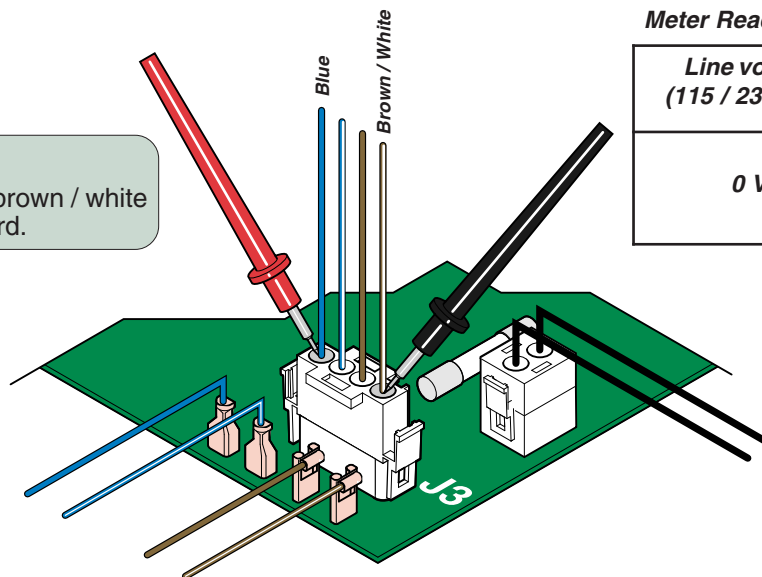
Step 1: Remove PC board cover.

Refer to: Section C - PC Board Cover



Rotational Brake Electrical Test

Step 3: Place meter probes on blue wire and brown / white wire at J3 on Rotational Base PC Board.



Refer to:

Primary Fuses B-2
EMI Filter Board Access B-52
Access Procedures (*Cover Removal*) C-1

Go To Page:

Rotational Brake Electrical Test

Step 2: Set meter to VAC.



Meter Reading	Status	Required Action
Line voltage (115 / 230 VAC)		EMI Filter board is OK. Check connections to main PC board.
0 VAC		Check primary fuses & wire harness. If fuses & harness are OK, replace EMI filter board.

MA717800i

Component Testing & Repair

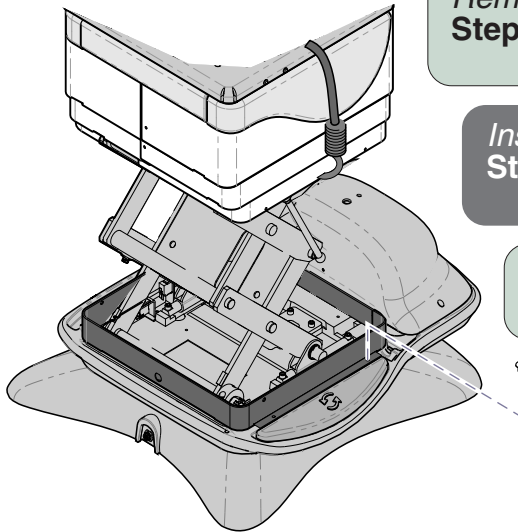
Rotational Base Brake System - continued

Brake Pedal Switch Access

Refer To:

Access Procedures (Cover Removal) C-1

Go To Page:



Removal.

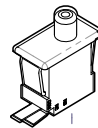
Step 1: Raise base shrouds.
Refer to: Section C - Base Shrouds

Installation

Step 3: Secure shroud spacer w/ two screws.
Lower base shrouds.

Removal.

Step 2: Remove two screws from shroud spacer.

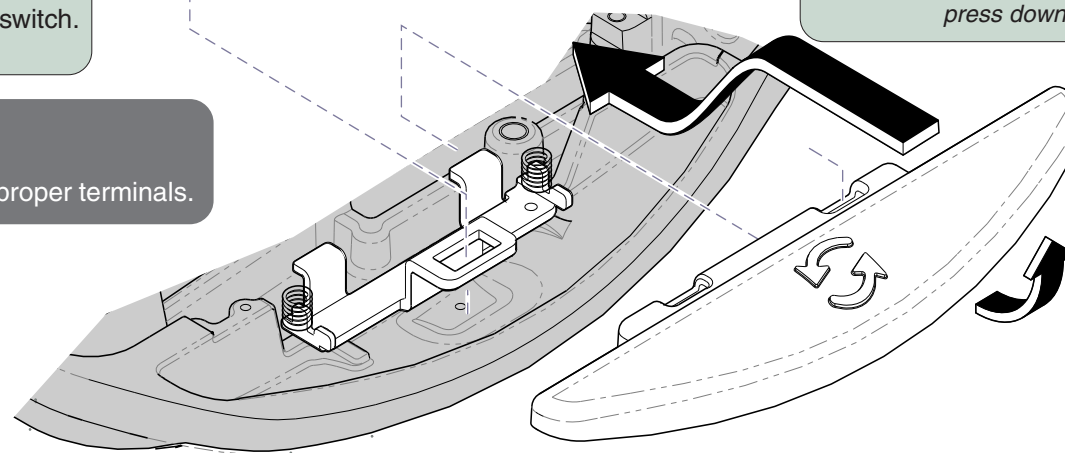


Removal.

Step 4: Tag & disconnect wires from switch.
Remove switch.

Installation

Step 1: Install switch.
Connect wires to proper terminals.



Installation

Step 2: Install brake pedal.
Connect wires to proper terminals.

Removal.

Step 3: Remove brake pedal.

Note: Pivot brake pedal toward column, then
press down and push forward to release.

Models:
Serial Numbers:

641 (-004 & -005)
All

MA715000i

**Rotational Base
Brake System**

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Component Testing & Repair

Rotational Base Brake System - continued

Separating Upper & Lower Base Castings

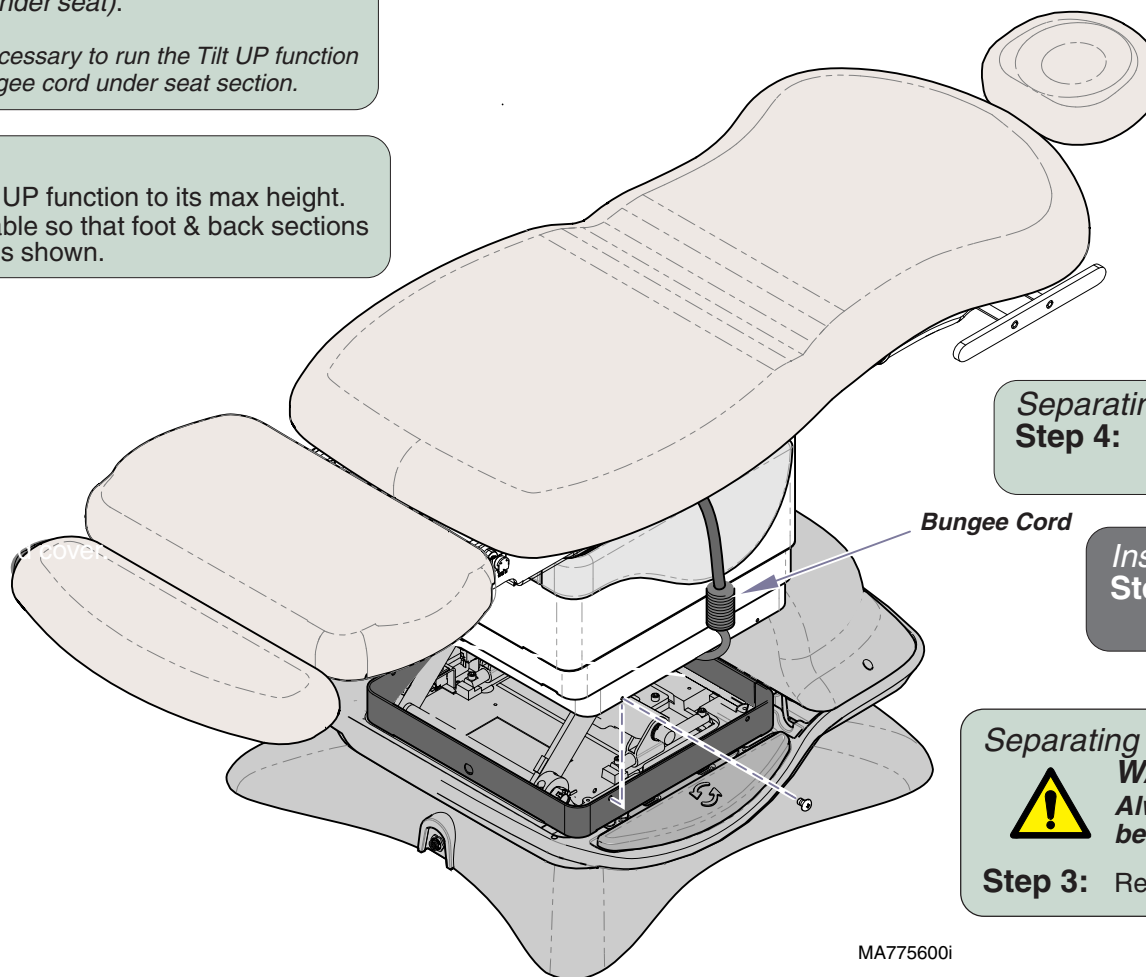
Separating

Step 1: Route bungee cord across top of base column (*under seat*).

Note: It may be necessary to run the Tilt UP function to route bungee cord under seat section.

Separating

Step 2: Run Base UP function to its max height. Position table so that foot & back sections are level as shown.



Separating

Step 4: Raise shrouds, then attach bungee cord hooks under shrouds on both sides.

Installation

Step 10: Remove bungee cord. Secure inner shrouds w/screws.

Separating



WARNING

Always disconnect table power cord before removing any covers or shrouds.

Step 3: Remove bottom screws from inner shrouds.

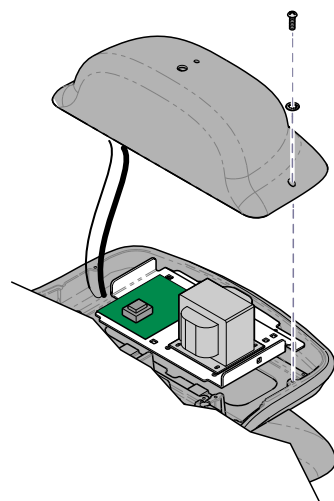
MA775600i

Procedure continued on following page...

Component Testing & Repair

Rotational Base Brake System - continued

Separating Upper & Lower Base Castings - continued



Removal

Step 5: Partially separate PC board cover.

Note: Do not disconnect wire harnesses.

Installation

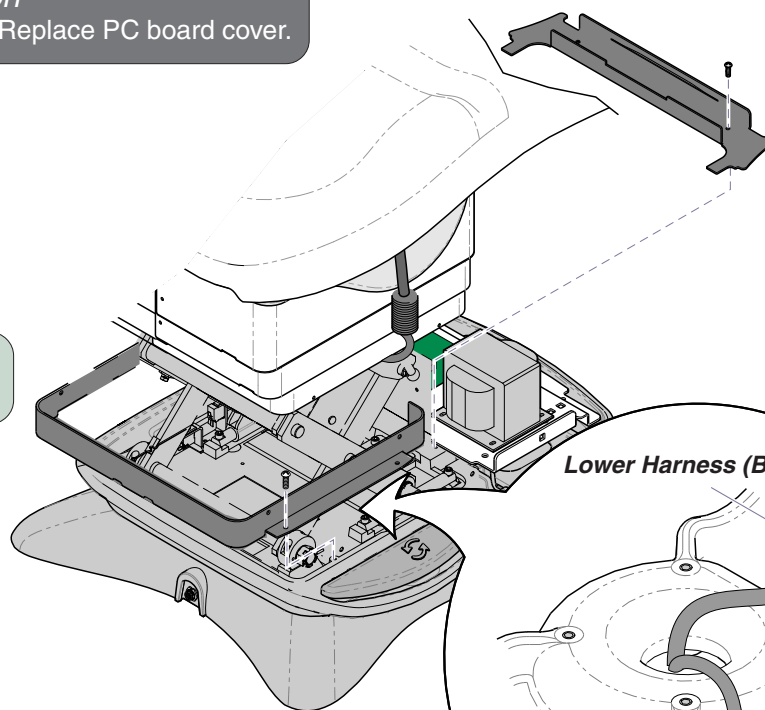
Step 9: Replace PC board cover.

Removal

Step 6: Remove shroud spacer.

Installation

Step 8: Install shroud spacer.

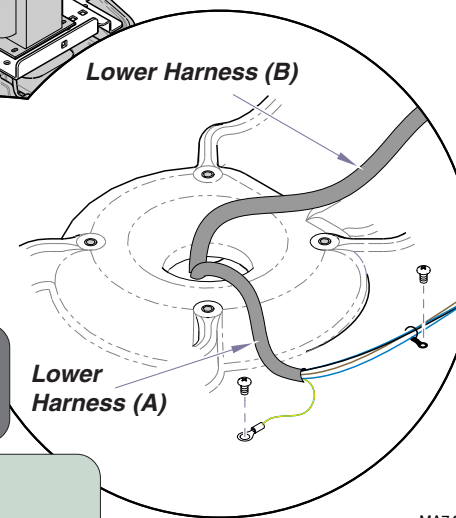


Installation

Step 6: Replace all cable ties.
Connect ground wires for lower harness (A).

Removal

Step 8: Disconnect ground wire for lower harness (A).
Remove cable ties securing lower harnesses (A & B) to base.



Installation

Step 7: Install wire harness cover.

Removal

Step 7: Remove wire harness cover.

MA746600i

Procedure continued on following page...

Models:
Serial Numbers:

641 (-004 & -005)
All

**Rotational Base
Brake System**

B-47

Component Testing & Repair

Rotational Base Brake System - continued

Separating Upper & Lower Base Castings - continued

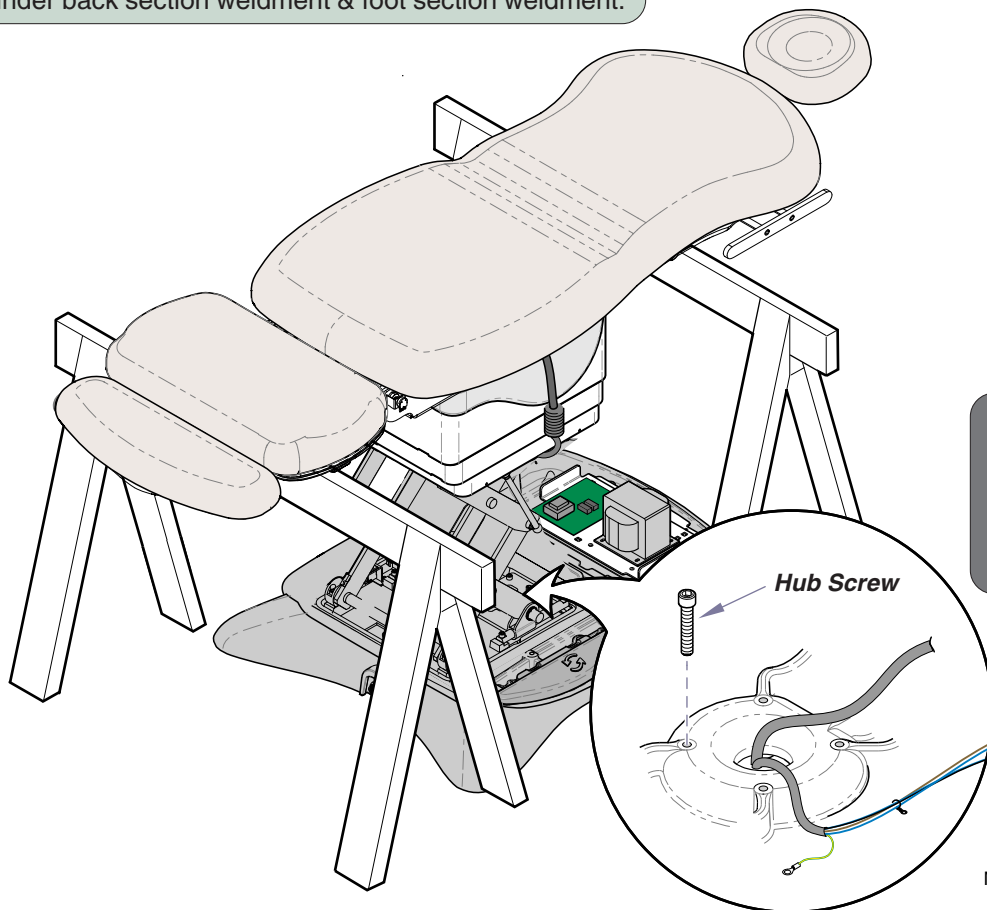
Removal



CAUTION

The table weighs approx. 540 lbs (244 kg).
Use supports designed for this amount of weight.

Step 9: Position sawhorses (or other suitable supports) under back section weldment & foot section weldment.



Installation



WARNING

Disconnect the table power cord before performing the remaining Installation steps.

Step 5: Install four hub screws.

Removal



CAUTION

The table top / upper base is not secured once the hub screws are removed. Hold onto the table when performing the following steps.

Step 10: Remove four hub screws.

MA775700i

Procedure continued on following page...

Component Testing & Repair

Rotational Base Brake System - continued

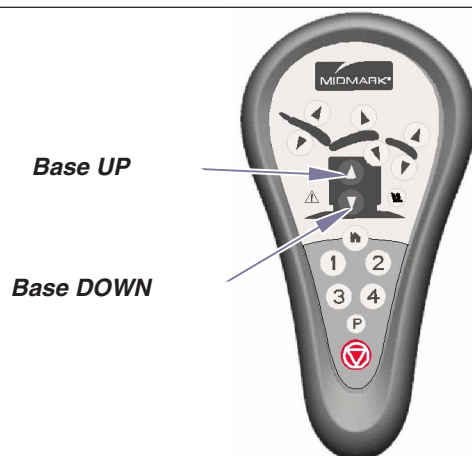
Separating Upper & Lower Base Castings - continued

Removal & Installation



WARNING

The Removal & Installation steps on this page require power to be connected to the table. Avoid all contact with wiring & electrical components.



Removal



Equipment Alert

The two lower wire harnesses are still connected to upper casting. Running the Base Down function too long may result in damage to the table.

Step 11: Press **Base DOWN** button on hand or foot control until upper and lower base castings separate slightly.

Installation



CAUTION

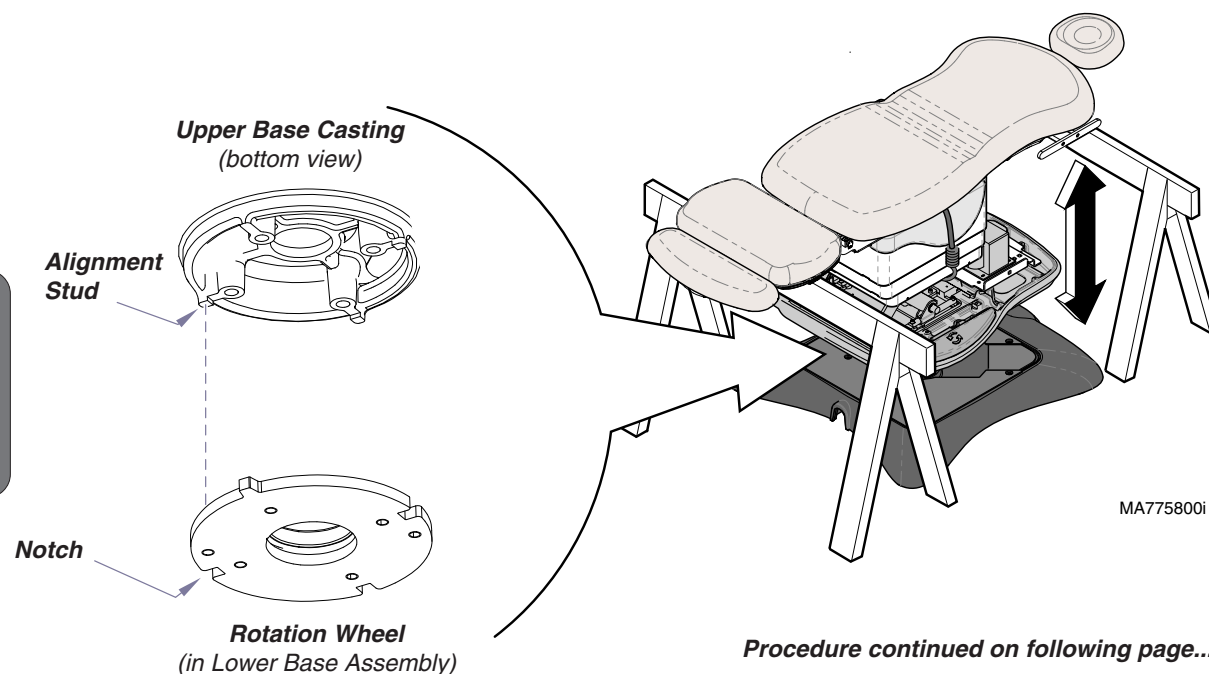
The table top / upper base is not secured until the hub screws are installed. Hold onto the table when performing the following steps.

Step 3: Press **Base UP** button on hand / foot control until table raises (slightly) off of sawhorses.

Installation

Step 4: Carefully adjust table top until alignment studs on bottom of upper casting lock into the notches on the rotation wheel.

Note: You will feel table top drop into place when alignment studs engage notches.



MA775800i

Procedure continued on following page...

Models:
Serial Numbers:

641 (-004 & -005)
All

**Rotational Base
Brake System**

B-49

Component Testing & Repair

Rotational Base Brake System - continued

Separating Upper & Lower Base Castings - continued

Removal & Installation

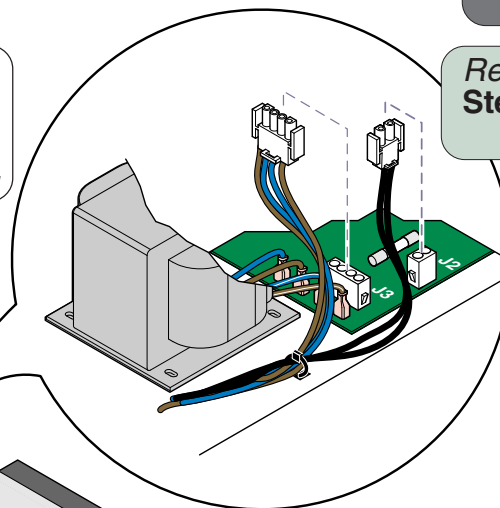
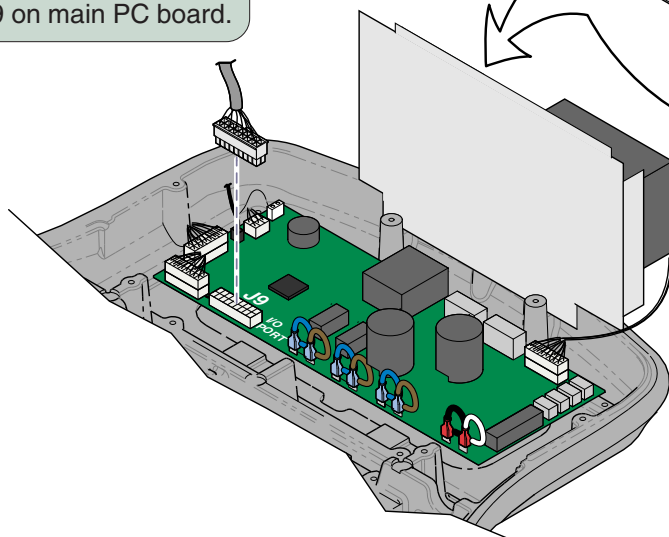


WARNING

Disconnect table power cord before performing any of the Removal / Installation steps on this page.

Removal

Step 13: Disconnect wire harness from J9 on main PC board.

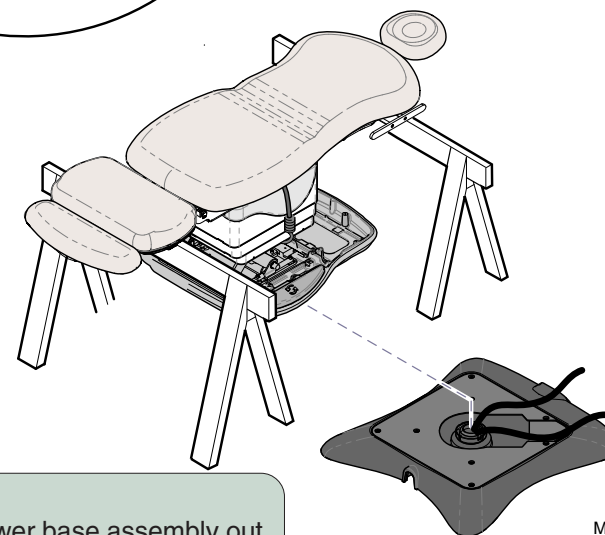


Installation

Step 2: Route wire harnesses thru upper casting. Reconnect all wire harnesses as shown.

Removal

Step 12: Disconnect wire harness from J2 & J3 on rotational base PC board.



Removal

Step 14: Slide lower base assembly out.

Installation

Step 1: Slide lower base assembly under table.

Note: To ease installation, align the new lower base assembly in the same position as the old base.

Rotational Base
Brake System

Models:
Serial Numbers:

641 (-004 & -005)
All

Component Testing & Repair

Rotational Base Brake System - continued

Brake Lever & Power Electro-magnet Access

Refer To:

Separating Upper & Lower

Base Castings B-46

Go To Page:

Brake Lever Removal

Step 1: Separate upper & lower base castings.
Refer to: Section B - Rot. Base Brake System.

Brake Lever Removal

Step 2: Remove corner cover & top cover from lower base assembly.

Brake Lever Installation

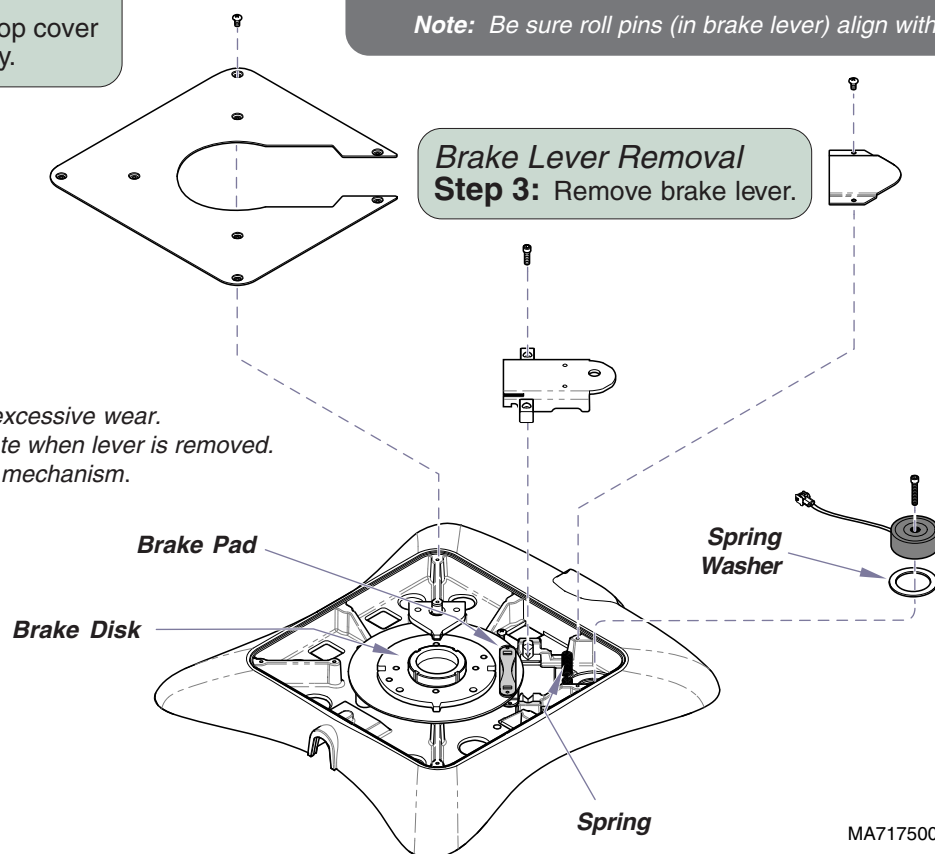
Step 1: Position brake lever so that it aligns w/ slots in brake pad.
Secure lever with two screws.

Note: Be sure roll pins (in brake lever) align with springs

Brake Lever Removal

Step 3: Remove brake lever.

Attention: Check brake pad for excessive wear.
Brake disk should rotate when lever is removed.
Remove any debris in mechanism.



Electro-magnet Removal

Step 1: Remove brake lever.

Electro-magnet Removal

Step 2: Disconnect magnet wire harness.
Remove magnet.

Electro-magnet Installation

Step 1: Connect magnet wire harness.
Install magnet.

Note: Be sure spring washer is in place under magnet.

Models:
Serial Numbers:

641 (-004 & -005)
All

**Rotational Base
Brake System**

B-51

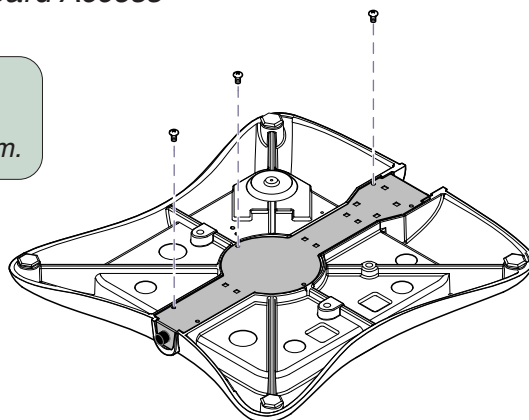
Component Testing & Repair

Rotational Base Brake System - continued

Foot Control Inlet / Power Inlet / EMI Filter Board Access

Removal (all)

Step 1: Separate upper & lower base castings.
Refer to: Section B - Rot. Base Brake System.



Refer To:

Separating Upper & Lower

Base Castings B-46

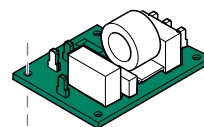
Go To Page:

Removal (all)

Step 2: Turn lower base casting upside down.
Remove bottom cover.

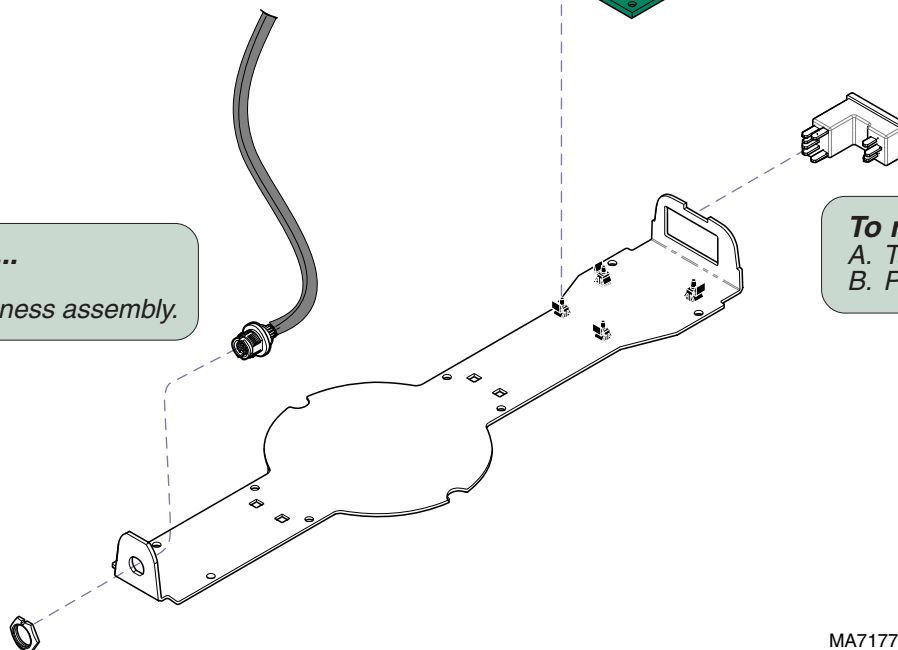
To remove EMI filter board...

- Tag & disconnect all wires to board.
- Remove board from mtg. studs.



To remove foot control inlet...

- Unscrew lock nut.
- Remove foot control inlet / harness assembly.



To remove power inlet...

- Tag & disconnect all wires to power inlet.
- Pry power inlet out of bottom cover.

MA717700i

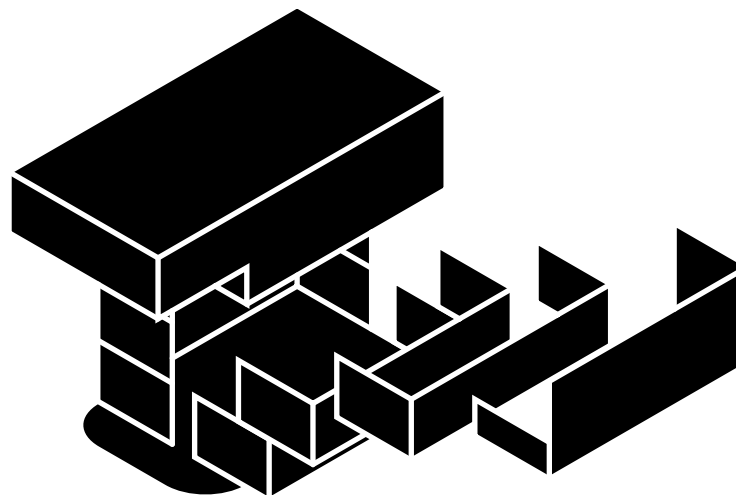
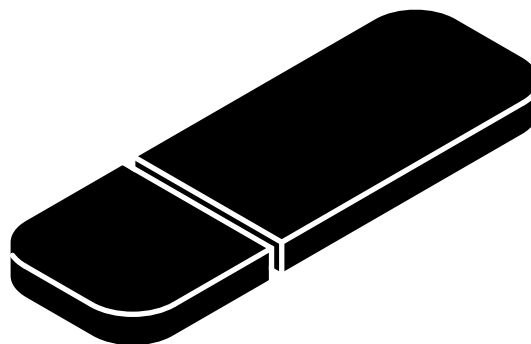
**Rotational Base
Brake System**

Models:
Serial Numbers:

641 (-004 & -005)
All

Section C

Access Procedures

**Removing & Installing:****Go To Page:**

PC Board Cover:

models w/ Standard Base C-2*models w/Rotational Base* C-3

Base Shrouds:

Raising (w/bungee cord) C-4*Lowering / Removing / Installing* C-5

Upholstery C-6

Click on the Go To Page button and enter the desired page number. (Note: Letters are case sensitive. ex. E-2)

Access Procedures

PC Board Cover (models w/ Standard Base)

Removal / Installation



Caution

Unplug power cord before removing PC Board cover.

Installation

Step 3: Position cover.
Secure with two screws.

Removal

Step 1: Remove two screw(s) and partially separate cover.

Note: You must perform Step 2 before cover can be completely removed.

Installation

Step 2: Connect wire harnesses to J9 & J12 on PC Board.

Removal

Step 2: Disconnect wire harnesses from J9 & J12 on PC Board.

Removal (if necessary)

Step 3: Remove wire harness cover.

Installation (if necessary)

Step 1: Install wire harness cover.

MA651500i

MA652100i

Access Procedures

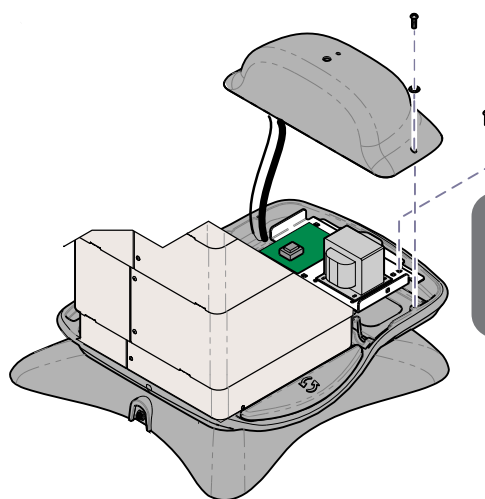
PC Board Cover (models w/ Rotational Base)

Removal / Installation



Caution

Unplug power cord before removing PC Board cover.



Removal

Step 1: Remove two screw(s) and **partially** separate cover.

Note: You must perform Step 3 before cover can be completely removed.

Removal

Step 2: Remove two screw(s) from transformer mtg. plate.

Installation

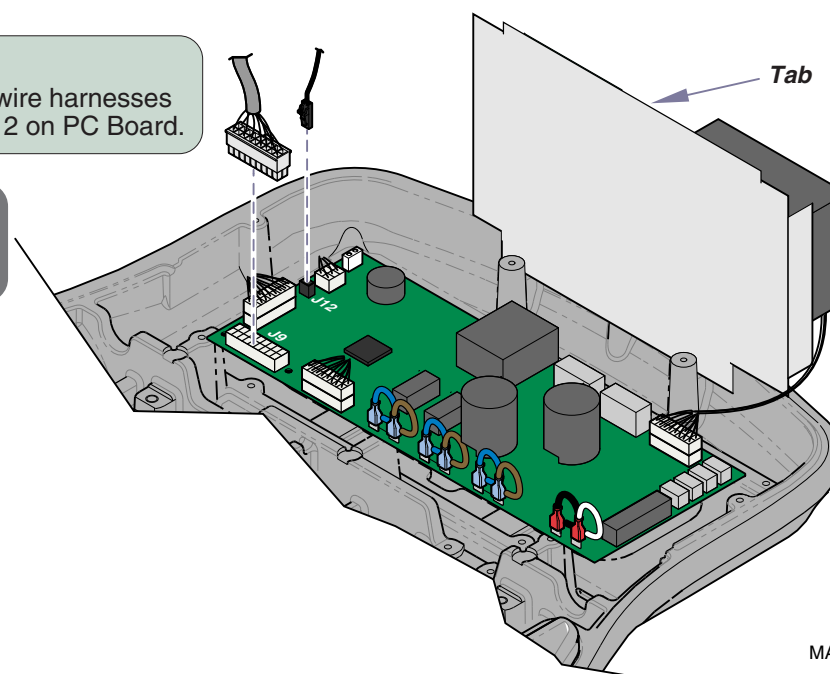
Step 3: Secure transformer mtg. plate. Position cover. Secure with two screws.

Removal

Step 4: Disconnect wire harnesses from J9 & J12 on PC Board.

Installation

Step 1: Connect wire harnesses to J9 & J12 on PC Board.



Installation

Step 2: Position transformer mtg. plate so that tab is engaged.

Removal

Step 3: Pull transformer mtg. plate out to disengage tab. Prop mtg. plate up behind two standoffs as shown.

MA713300i

Models: 641 (-004 & -005)
Serial Numbers: all

PC Board Cover
(Rotational Base)

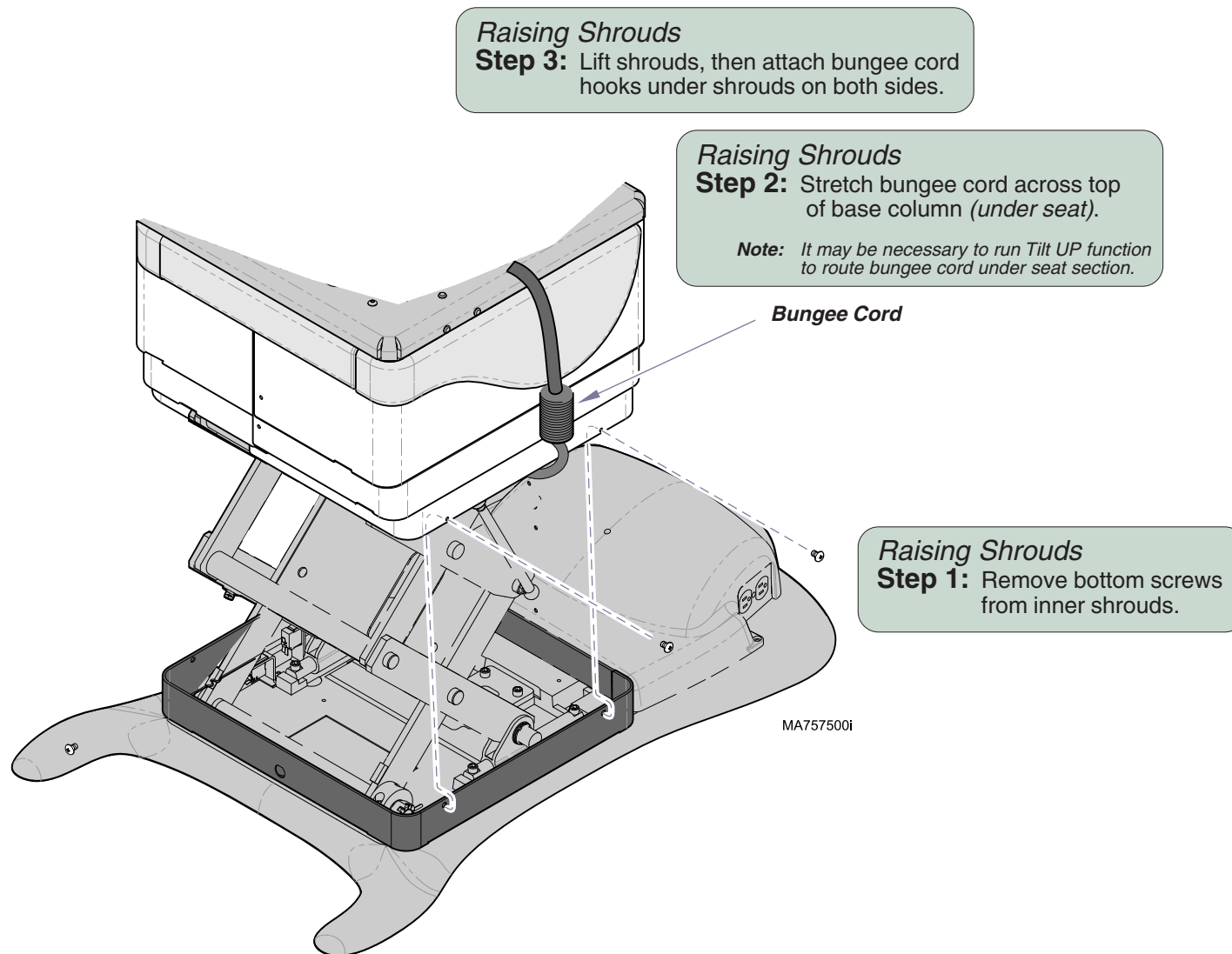
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Rev. 7/6/12

Access Procedures

Base Shrouds

Raising (w/ bungee cord)



Access Procedures

Base Shrouds - continued

Lowering / Removal / Installation

Lowering / Removal

Step 1: Remove magnetic cladding (3 pcs).

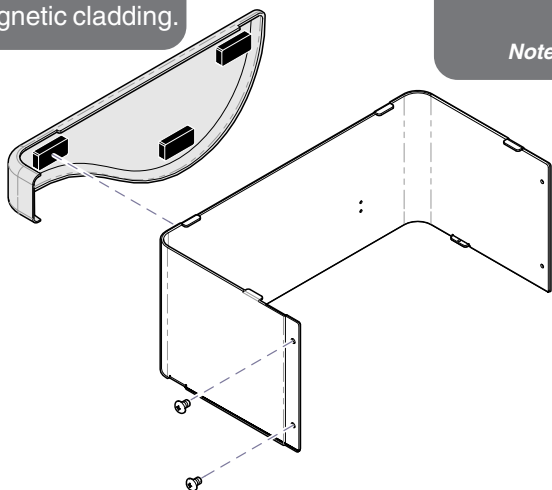
Installation

Step 3: Install magnetic cladding.

Installation

Step 2: Position outer shrouds.
Secure with screws at both ends.

Note: Insert shroud tabs into seat weldment slots.



Equipment Alert

Lower the base before performing Step 2.
This will prevent the shrouds from falling
when the outer shrouds are removed.

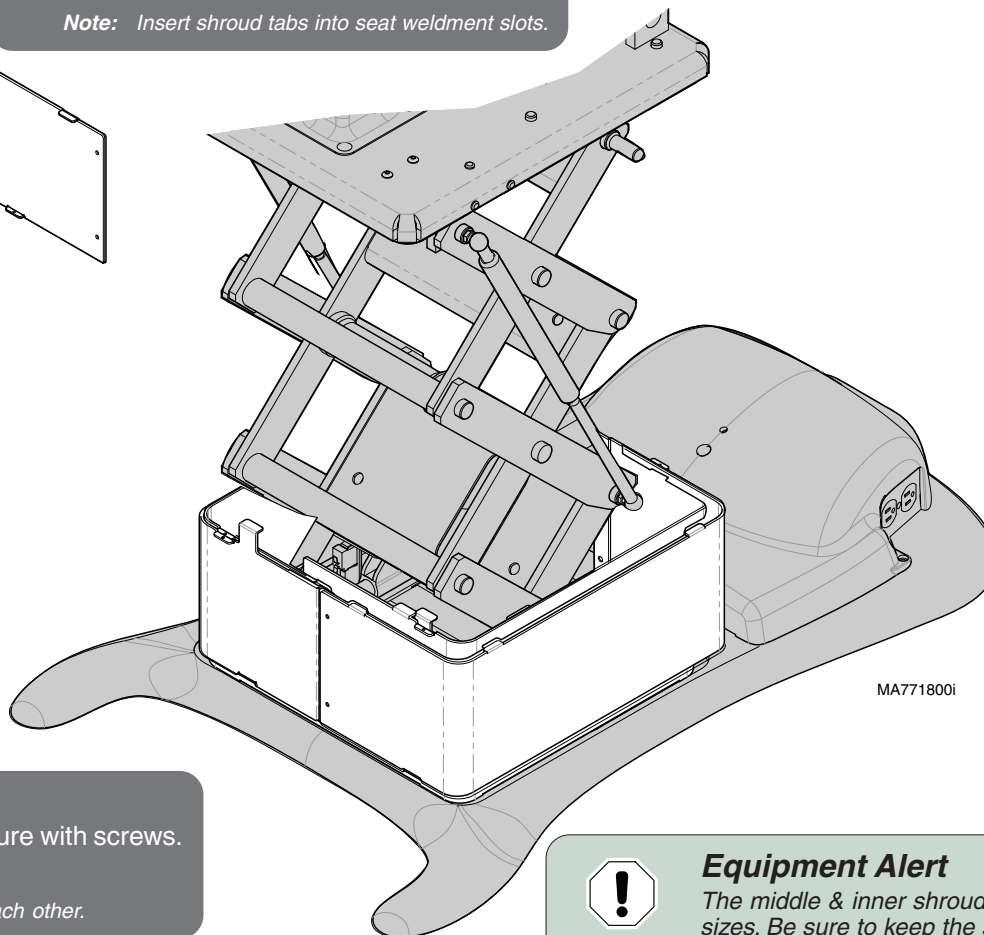
Lowering / Removal

Step 2: Remove screws from outer shrouds only.
Pull shrouds outward to disengage tabs.

Installation

Step 1: Position inner shrouds, then secure with screws.
Repeat for middle shrouds

Note: Be sure shroud tabs stack on top of each other.



MA771800i



Equipment Alert

The middle & inner shrouds sets are different
sizes. Be sure to keep the sets together.

Removal

Step 3: Remove screws from inner & middle shrouds.

Models:
Serial Numbers:

ALL

Base Shrouds

C-5

Access Procedures

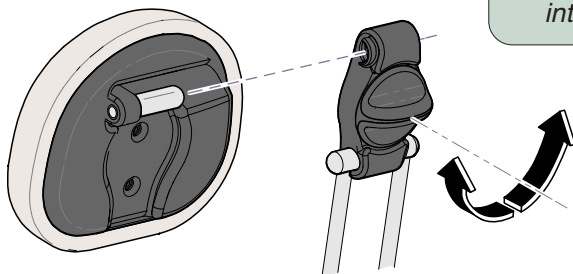
Upholstery

Removal / Installation

NOTE: Upholstery is fastened with velcro. To remove, simply pull desired section away from mounting surface.

To install seat / back section upholstery...

- Raise back section of table to approx. 30°.
- Position front of seat upholstery against mounting board.
- Press seat section down firmly, then lay back section into position and press down firmly.

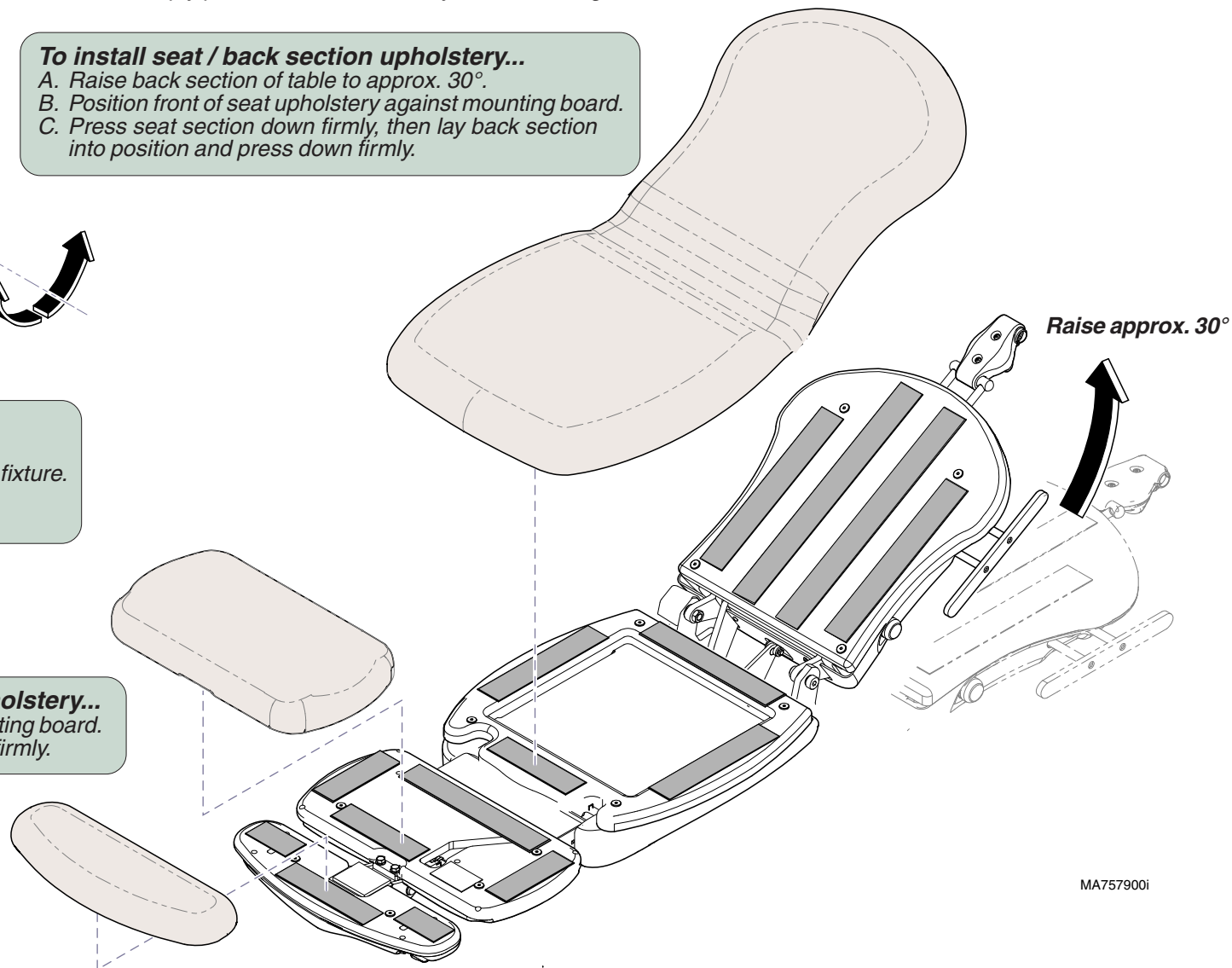


To install headrest assembly...

- Loosen headrest adjustment knob.
- Insert mounting stud into headrest fixture.
- Position headrest as desired.
- Tighten headrest adjustment knob.

To install foot rest / extension upholstery...

- Position upholstery section with mounting board.
- Lay upholstery flat, then press down firmly.



MA757900i

Section D

Wiring Diagrams

Model**Go To Page:**

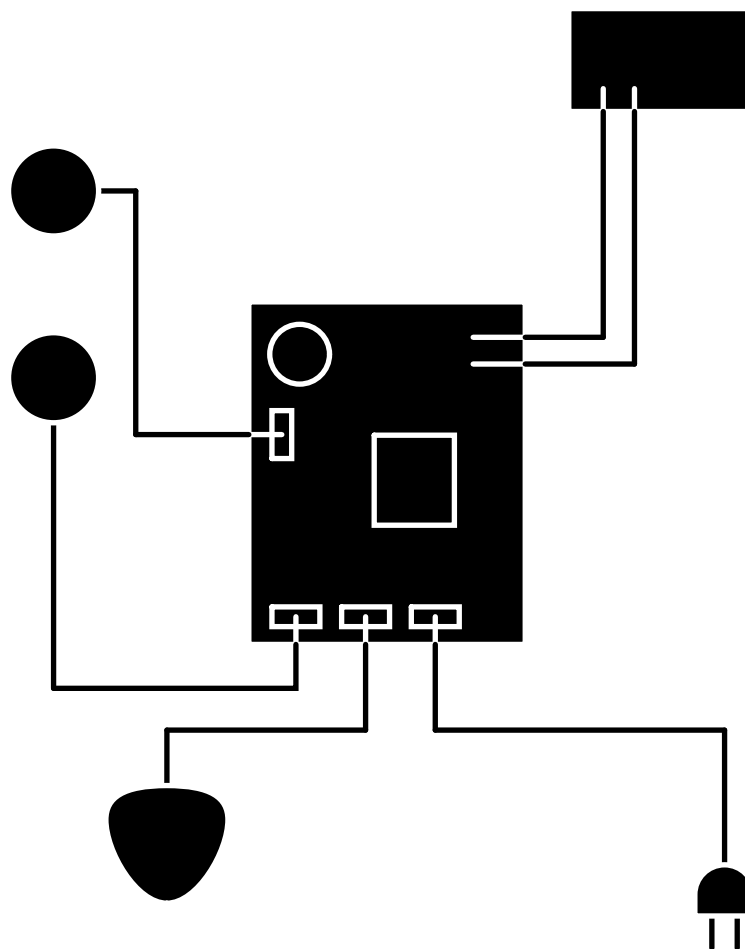
641:

(-002) D-2

(-003) D-3

(-004 & -005) D-4

Click on the Go To Page button and enter the desired page number. (Note: Letters are case sensitive. ex. E-2)



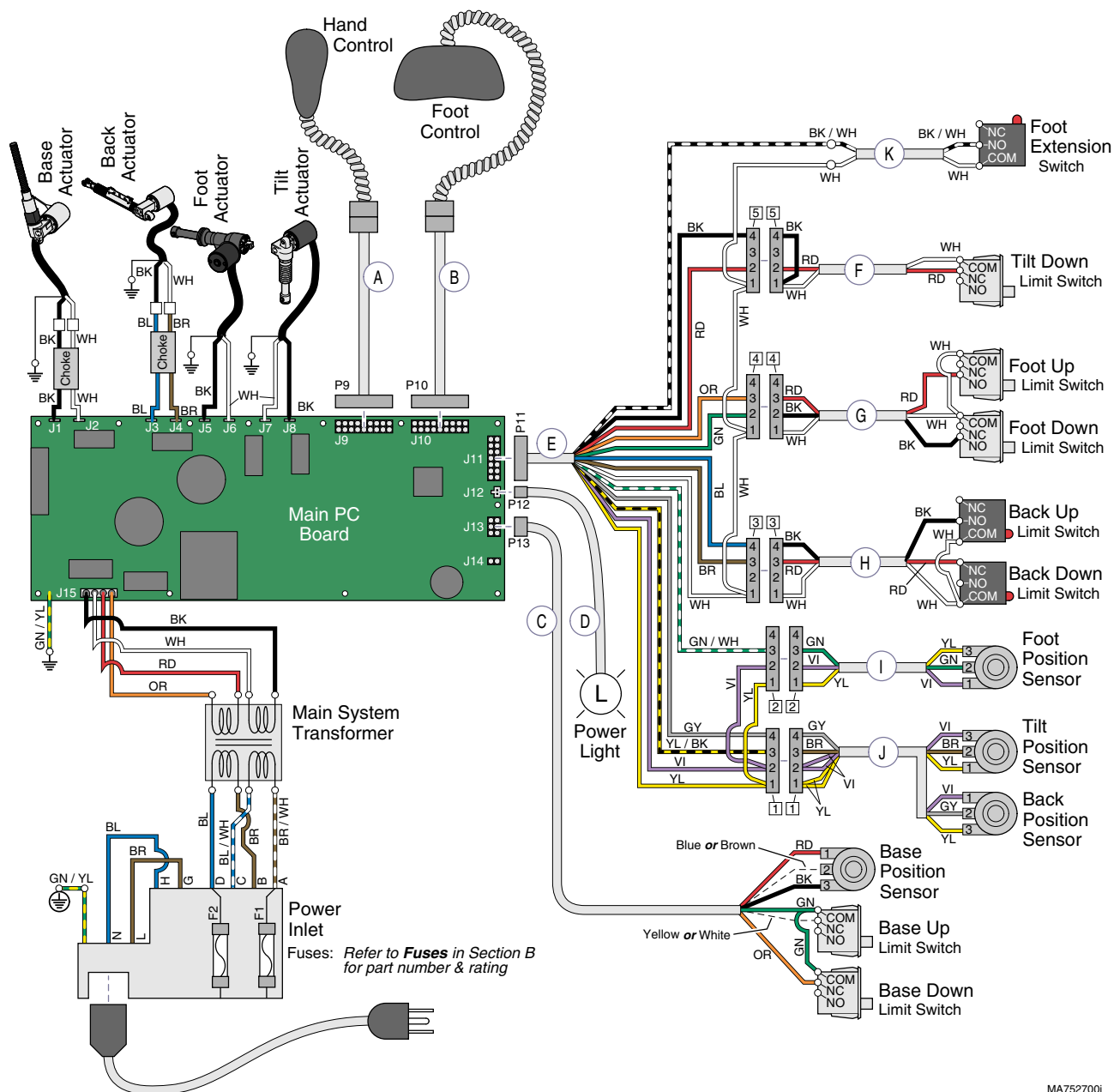
Wiring Diagrams

Refer To:

Go To Page:

Primary Fuses B-2

Item	Harness Description <i>(sensors & switches not included)</i>	Part Number
A	Connection Port Harness <i>[short - head end]</i>	002-1110-00
B	Connection Port Harness <i>[long - foot end]</i>	002-1110-01
C	Position Sensor / Limit Switch Harness - BASE	015-1821-00
D	Power Light Harness <i>[includes green light]</i>	015-1793-00
E	'PC Board to Junction Board' Harness	015-1937-00
F	Tilt Limit Switch Harness	015-2107-00
G	Foot Limit Switch Assembly <i>[includes harness & two switches]</i>	015-2098-00
H	Back Limit Switch Assembly <i>[includes harness & two switches]</i>	015-2097-00
I	Position Sensor Harness - FOOT	015-1773-00 <i>(incl. sensor)</i>
J	Position Sensor Harness - TILT & BACK	015-1761-00 <i>(incl. both sensors)</i>
K	Foot Extension Switch Harness	015-2106-00



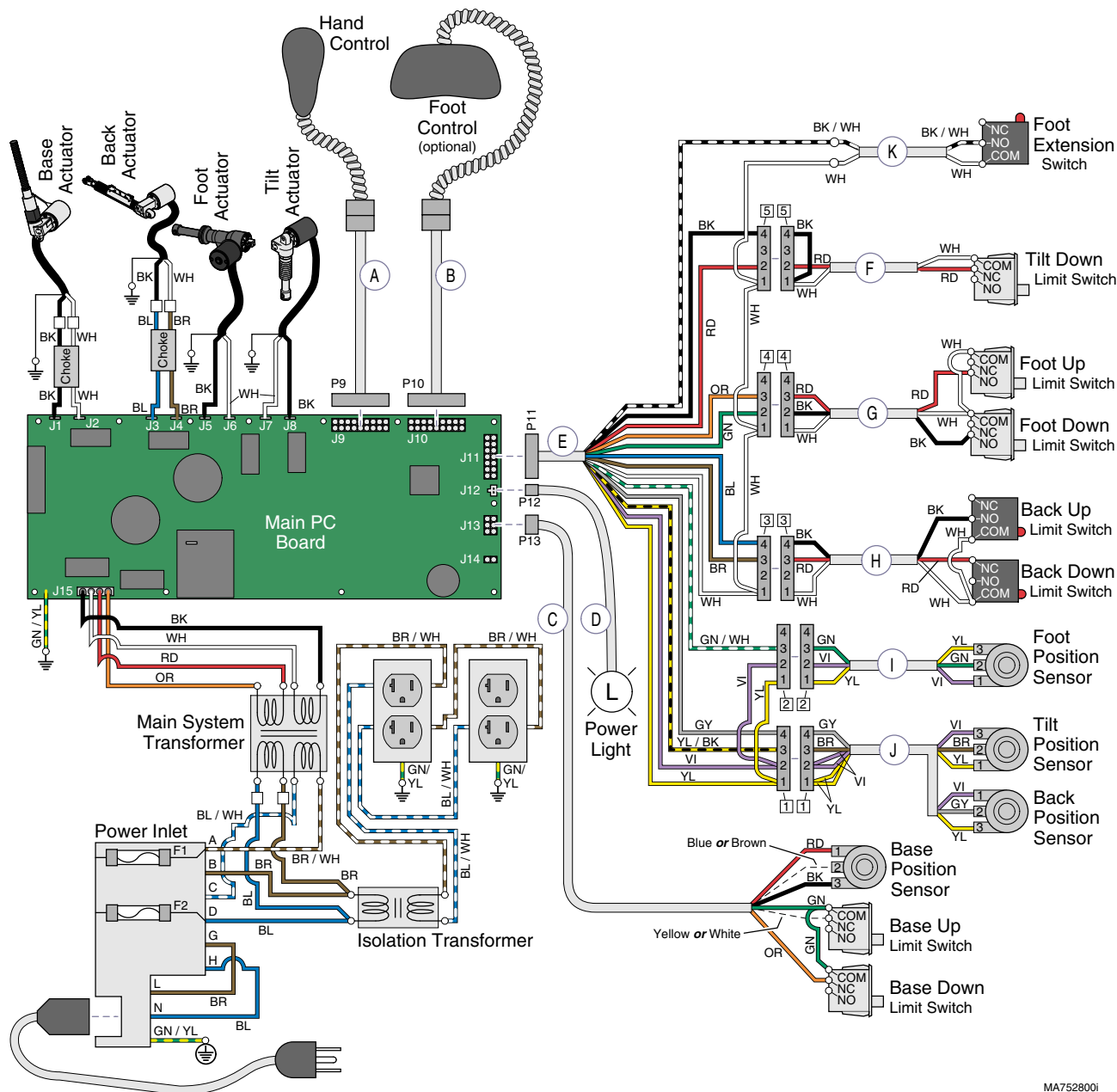
MA752700

Wiring Diagrams

Refer To:

Primary Fuses B-2

Go To Page:



MA7528001

Item	Harness Description (sensors & switches not included)	Part Number
A	Connection Port Harness [short - head end]	002-1110-00
B	Connection Port Harness [long - foot end]	002-1110-01
C	Position Sensor / Limit Switch Harness - BASE	015-1821-00
D	Power Light Harness [includes green light]	015-1793-00
E	'PC Board to Junction Board' Harness	015-1937-00
F	Tilt Limit Switch Harness	015-2107-00
G	Foot Limit Switch Assembly [includes harness & two switches]	015-2098-00
H	Back Limit Switch Assembly [includes harness & two switches]	015-2097-00
I	Position Sensor Harness - FOOT (incl. sensor)	015-1773-00
J	Position Sensor Harness - TILT & BACK (incl. both sensors)	015-1761-00
K	Foot Extension Switch Harness	015-2106-00

Models:
Serial Numbers:

641 (-003)
all

Wiring Diagrams

D-3

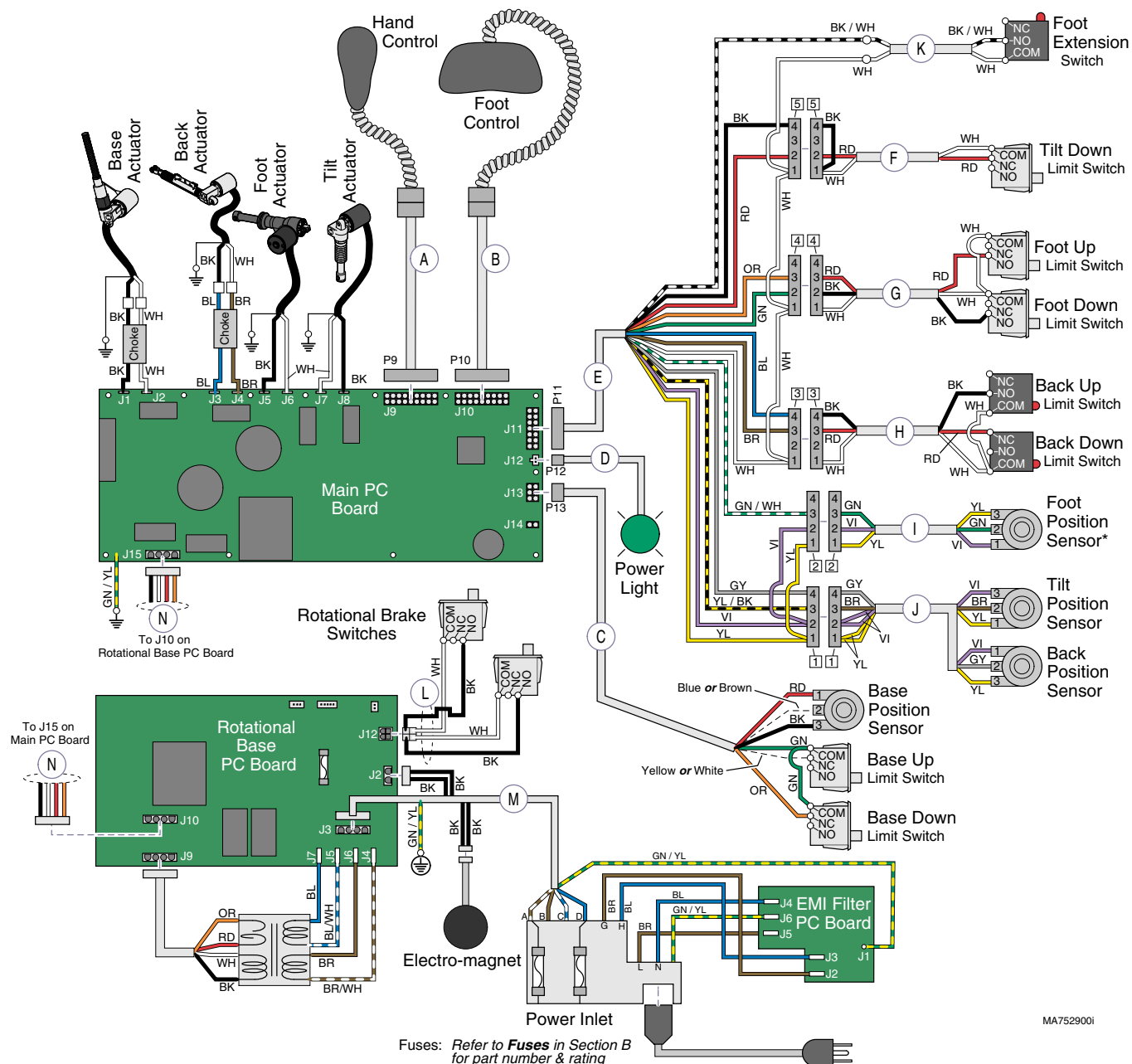
Wiring Diagrams

Refer To:

Primary Fuses B-2

Go To Page:

Item	Harness Description (sensors & switches not included)	Part Number
A	Connection Port Harness [short - head end]	002-1110-02
B	Connection Port Harness [long - foot end]	002-1110-03
C	Position Sensor / Limit Switch Harness - BASE	015-1821-00
D	Power Light Harness [includes green light]	015-1793-00
E	'PC Board to Junction Board' Harness	015-1937-00
F	Tilt Limit Switch Harness	015-2107-00
G	Foot Limit Switch Assembly [includes harness & two switches]	015-2098-00
H	Back Limit Switch Assembly [includes harness & two switches]	015-2097-00
I	Position Sensor Harness - FOOT	015-1773-00 (incl. sensor)
J	Position Sensor Harness - TILT & BACK	015-1761-00 (incl. both sensors)
K	Foot Extension Switch Harness	015-2106-00
L	Brake Switch Harness	015-1967-00
M	Rotational Base PC Board - Power Inlet	015-1966-00
N	Rotational Base PC Board - Main PC Board	015-1968-00

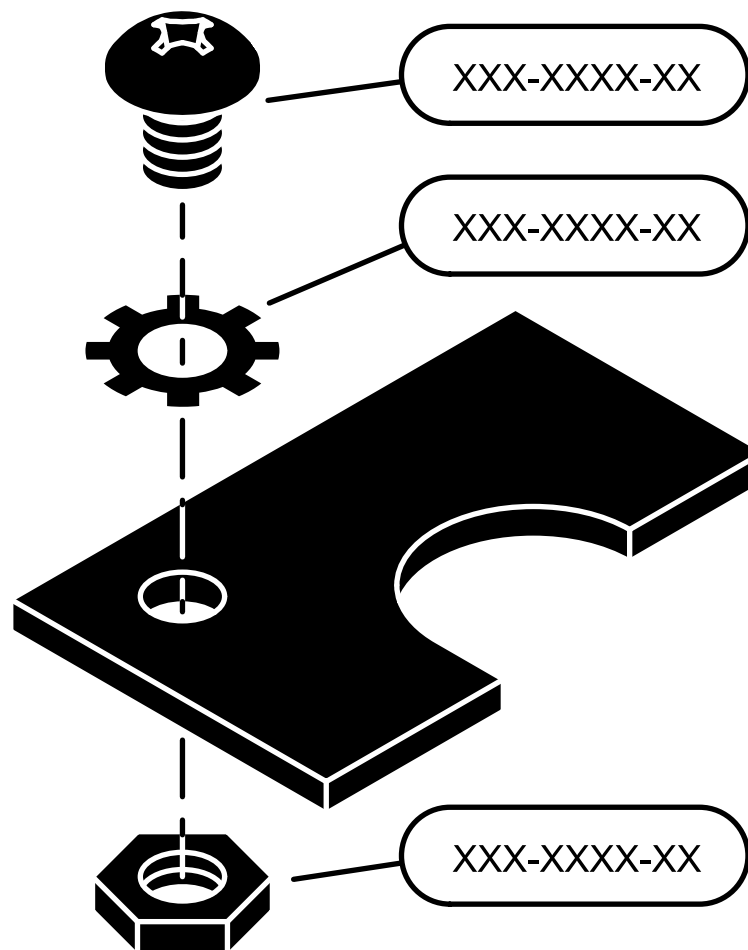


Section E

Exploded Views & Parts Lists

Model**Go To Page:****641:***Standard Base (-002 /-003) E-2**Rotational Base (-004 /-005) ... E-3*

Click on the Go To Page button and enter the desired page number. (Note: Letters are case sensitive. ex. E-2)



641 (-002 / -003)

w/ Standard Base

The blue boxes on this page are "linked".
Point and click on the text in the desired box to go
to that page, or use the Go To Page button.

Go To Page:

Upholstered Top:

Premium E-4
Ultra-Premium E-5

Position

Sensors E-18

Actuators / Limit Switches:

Base (w/limit switches) E-19
Back (w/limit switches) E-20
Tilt (w/limit switch) E-21
Foot (w/limit switches) E-22

Leg Section E-8

Foot Extension E-7

Standard Base

Components E-15

includes:
main PC board, power cord,
fuses, main transformer, etc.

Hand Control E-25

Foot Control:

Linear-style E-23
Disc-style E-24

Adjustment Knobs E-11

Headlock

Assembly E-6

Back Section E-10

Seat Section E-9

Column Top

Components E-13

includes:
upper glides & wire routing strap

Base Shrouds E-12

Optional Features

Chair Receptacles E-26

Optional Headrests E-27

Paper Roll Holder E-28

Scissor

Components E-14

includes:
base limit switches & gas springs

641 (-004 / -005)

w/ Rotational Base

The blue boxes on this page are "linked".
Point and click on the text in the desired box to go to that page, or use the Go To Page button.

Go To Page:

Upholstered Top:

Premium E-4
Ultra-Premium E-5

Position

Sensors E-18

Actuators / Limit Switches:

Base (w/limit switches) E-19
Back (w/limit switches) E-20
Tilt (w/limit switch) E-21
Foot (w/limit switches) E-22

Leg Section E-8

Foot Extension E-7

Rotational Base:

Upper Section E-16

includes:
main PC board, brake switches,
main transformer, rotation control
PC board, etc.

Rotational Base:

Lower Section E-17

includes:
brake, rotation bearings, etc.

Hand Control E-25

Foot Control:

Linear-style E-23
Disc-style E-24

Scissor

Components E-14

includes:
base limit switches & gas springs

Adjustment Knobs E-11

Headlock

Assembly E-6

Back Section E-10

Seat Section E-9

Column Top

Components E-13

includes:
upper glides & wire routing strap

Base Shrouds E-12

Optional Features

Chair Receptacles E-26
Optional Headrests E-27
Paper Roll Holder E-28

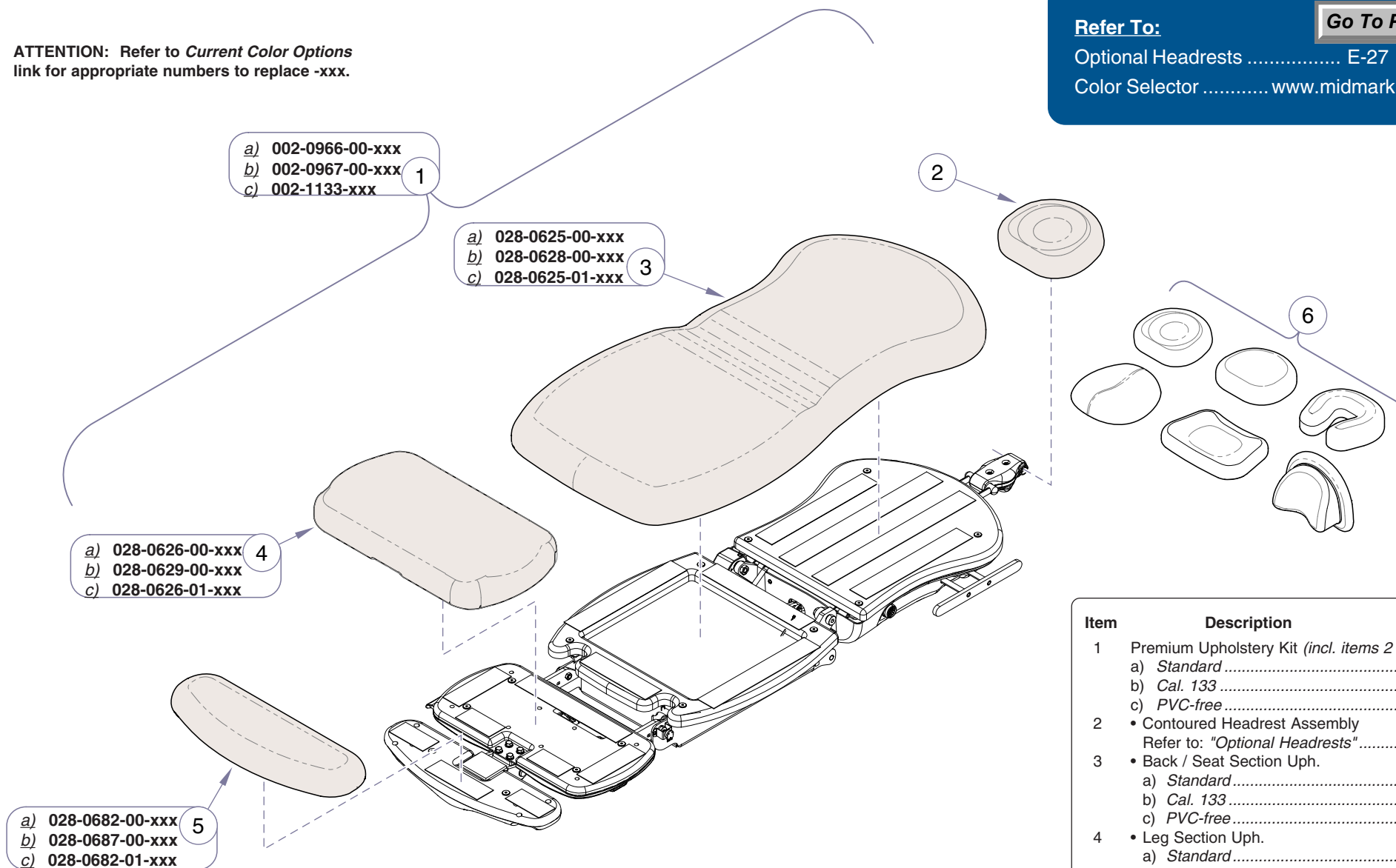
* Indicates multiple pages due to a serial number break for the parts illustration

ATTENTION: Refer to *Current Color Options* link for appropriate numbers to replace -xxx.

Refer To:

Optional Headrests E-27
Color Selector www.midmark.com

Go To Page:



Item	Description	Qty.
1	Premium Upholstery Kit (<i>incl. items 2 thru 5</i>):	
	a) <i>Standard</i>	1
	b) <i>Cal. 133</i>	1
	c) <i>PVC-free</i>	1
2	• Contoured Headrest Assembly Refer to: "Optional Headrests"	Ref
3	• Back / Seat Section Uph.	
	a) <i>Standard</i>	1
	b) <i>Cal. 133</i>	1
	c) <i>PVC-free</i>	1
4	• Leg Section Uph.	
	a) <i>Standard</i>	1
	b) <i>Cal. 133</i>	1
	c) <i>PVC-free</i>	1
5	• Foot Extension Uph.	
	a) <i>Standard</i>	1
	b) <i>Cal. 133</i>	1
	c) <i>PVC-free</i>	1
6	Refer to: "Optional Headrests"	Ref

Always Specify Model & Serial Number

MA761500i

Upholstered Top:
Premium

Models:
Serial Numbers:

All

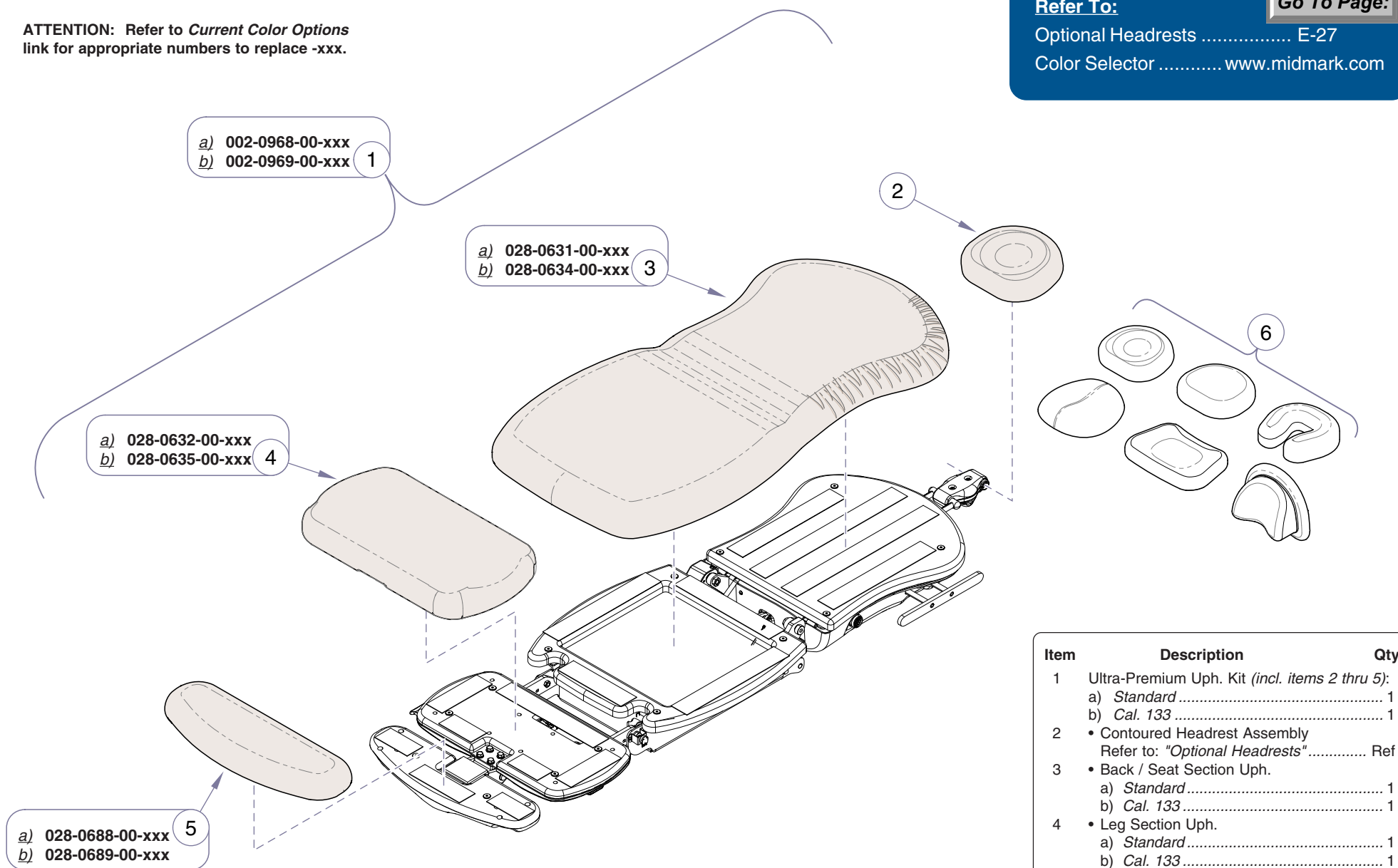
ATTENTION: Refer to *Current Color Options* link for appropriate numbers to replace -xxx.

Refer To:

Optional Headrests E-27

Color Selector www.midmark.com

Go To Page:



Item	Description	Qty.
1	Ultra-Premium Uph. Kit (incl. items 2 thru 5):	
a)	Standard	1
b)	Cal. 133	1
2	• Contoured Headrest Assembly Refer to: "Optional Headrests"	Ref
3	• Back / Seat Section Uph.	
a)	Standard	1
b)	Cal. 133	1
4	• Leg Section Uph.	
a)	Standard	1
b)	Cal. 133	1
5	• Foot Extension Uph.	
a)	Standard	1
b)	Cal. 133	1
6	Refer to: "Optional Headrests"	Ref

Always Specify Model & Serial Number

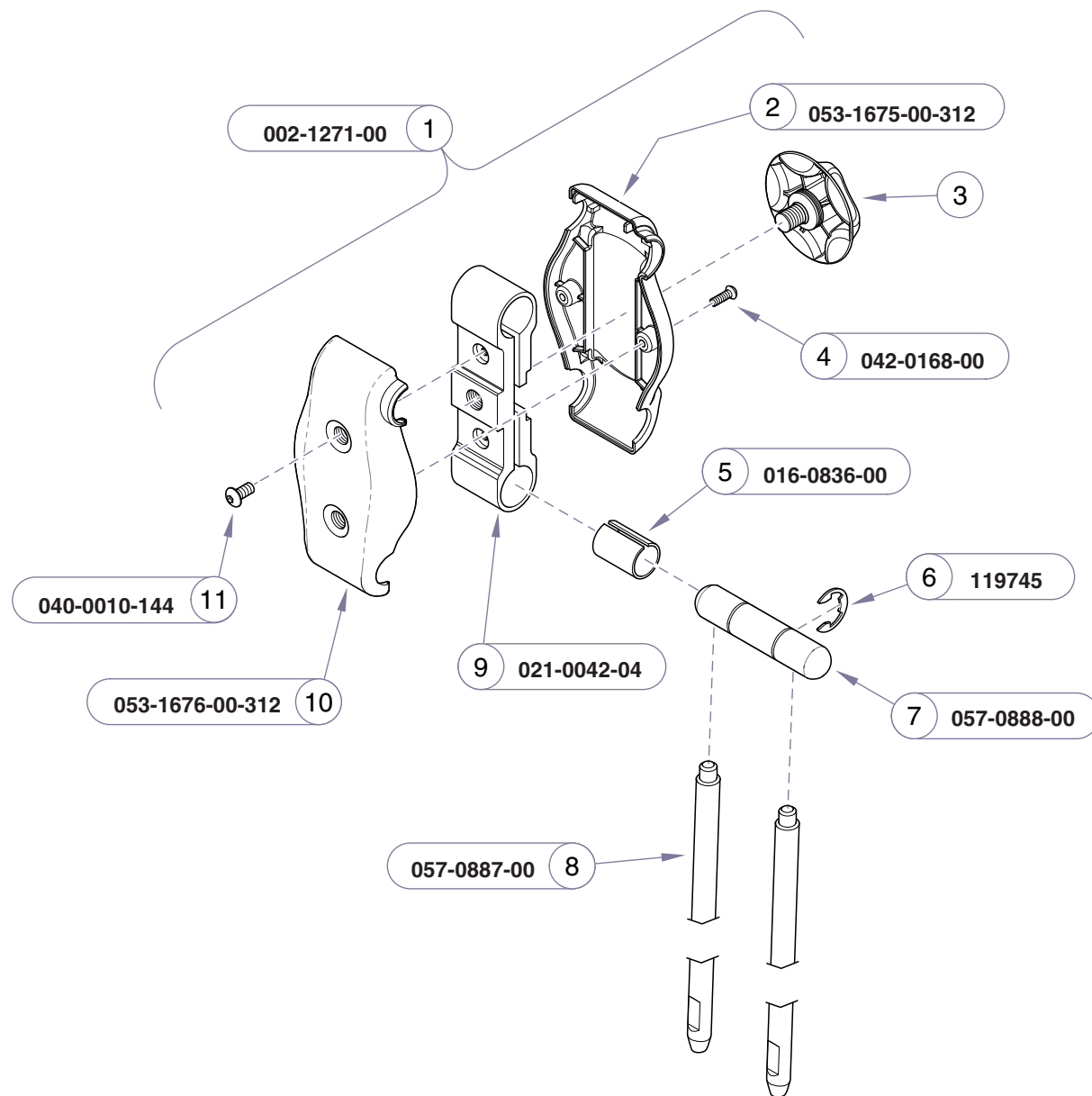
MA761600I

Models:
Serial Numbers:

All

Upholstered Top:
Ultra-Premium

E-5



Refer To:

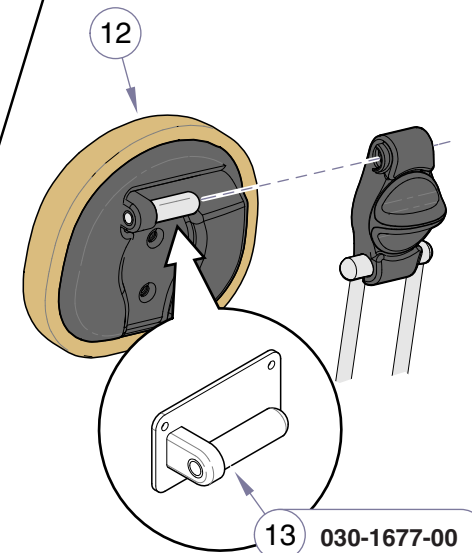
Go To Page:

Upholstered Top:

Premium E-4

Ultra-Premium E-5

Adjustment Knob Assembly E-11



Item	Description	Qty.
1	Headlock Assembly (includes items 2 thru 11)	1
2	• Headlock Housing: Back	1
3	• Refer to: "Adjustment Knob Assy"	Ref
4	• Screw (3.5 mm x 10mm)	2
5	• Sleeve Bearing	2
6	• E-ring (0.75" dia.)	2
7	• Headlock Pivot	1
8	• Headlock Shaft (apply red Loctite)	2
9	• Headrest Clamp	1
10	• Headlock Housing: Front	1
11	• Screw (#10-32 x 1/2")	2
12	Refer to: "Upholstered Top"	Ref
13	Head Pivot Weldment	1

Always Specify Model & Serial Number

MA761700i

Headlock Assembly

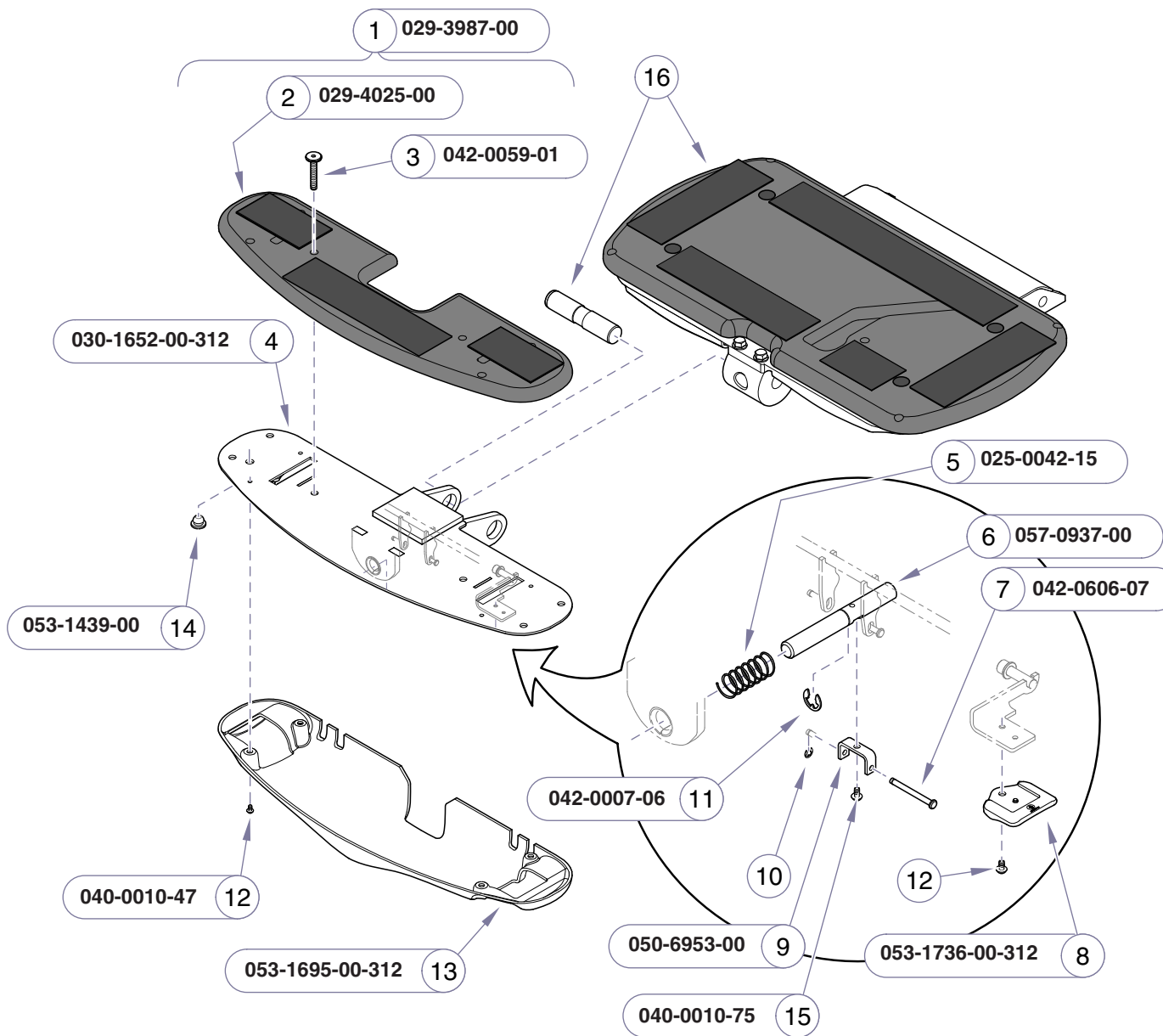
Models:
Serial Numbers:

All

Refer To:

Go To Page:

Leg Section E-8



MA764401i

Item	Description	Qty.
1	Foot Extension Assembly (incl. items 2 thru 14)	1
2	• Foot Ext. Substrate (incl. velcro)	1
3	• Screw	2
4	• Foot Ext. Weldment	1
5	• Spring	1
6	• Locking Pin	1
7	• Clevis Pin (incl. item 10)	1
8	• Handle	2
9	• Bracket	1
10	• E-ring (small)	Ref
11	• E-ring (large)	1
12	• Screw (#10-24 x 3/8")	6
13	• Bottom Cover	1
14	• Stem Bumper	2
15	• Screw (#10-24 x 3/8")	1
16	Refer to: "Leg Section"	Ref

Always Specify Model & Serial Number

Models:
Serial Numbers:

All

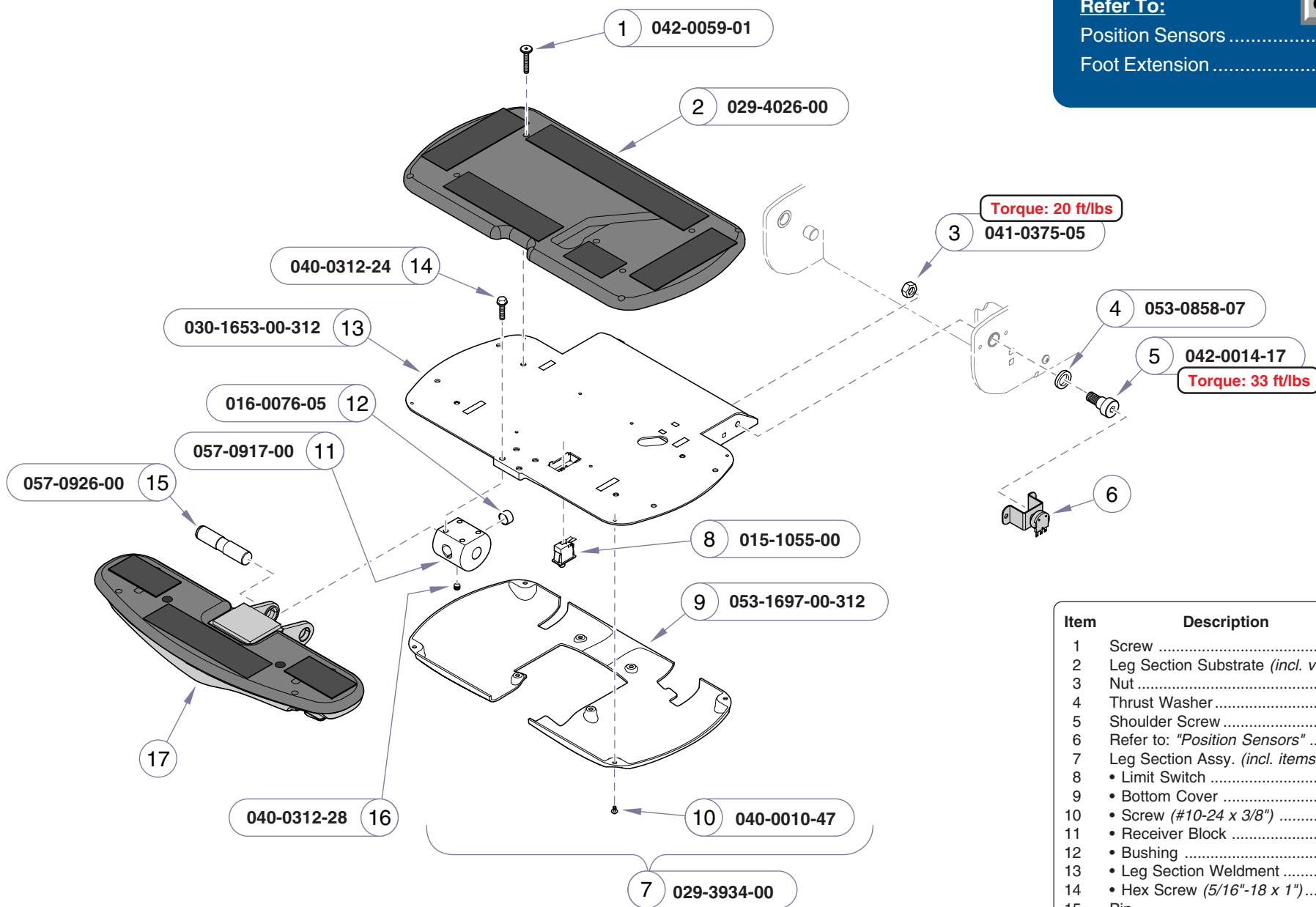
Foot Extension

E-7

Refer To:

Go To Page:

Position Sensors E-18
 Foot Extension E-7



MA764600i

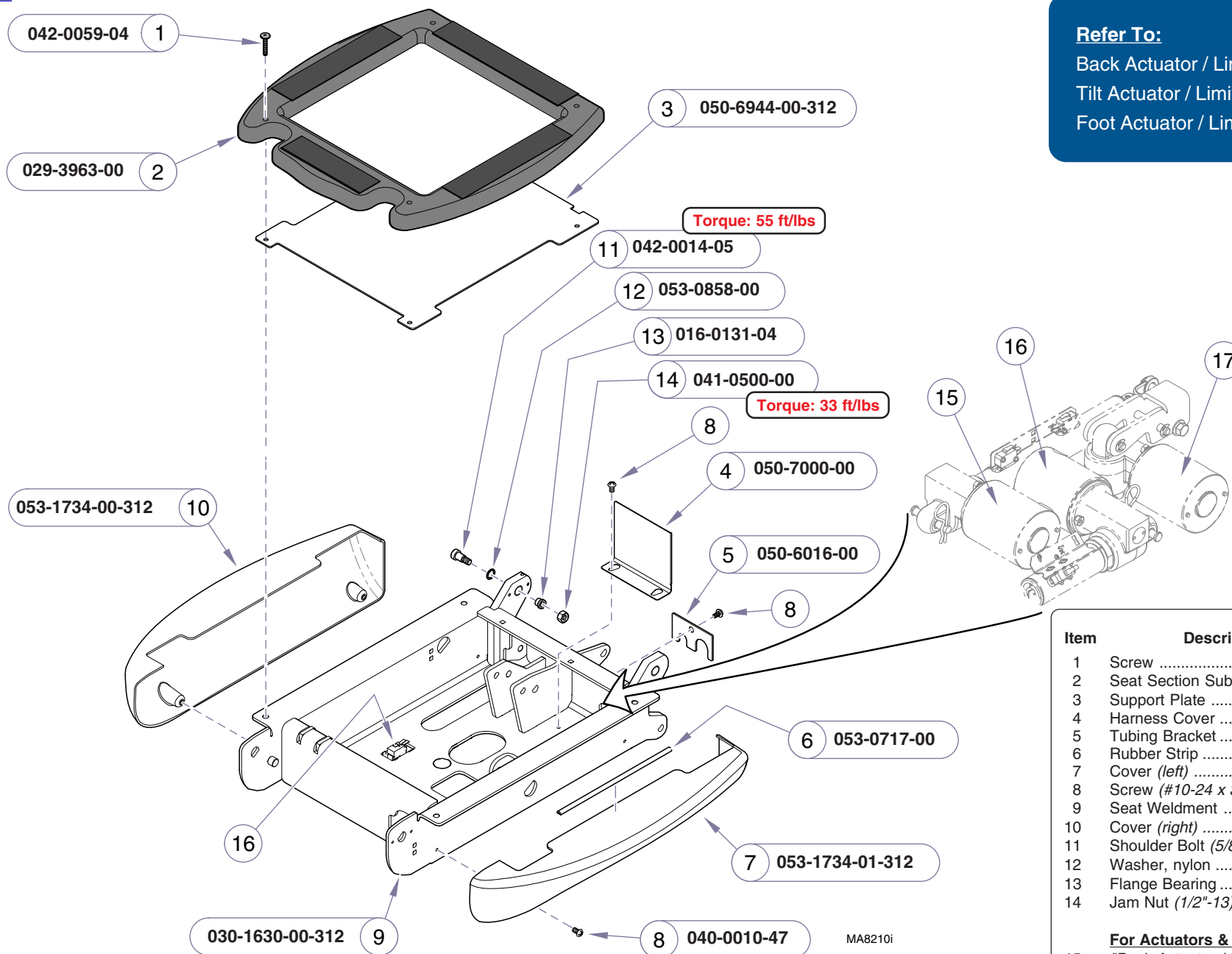
Item	Description	Qty.
1	Screw	4
2	Leg Section Substrate (incl. velcro)	1
3	Nut	2
4	Thrust Washer	1
5	Shoulder Screw	2
6	Refer to: "Position Sensors"	Ref
7	Leg Section Assy. (incl. items 8 thru 14)	1
8	• Limit Switch	1
9	• Bottom Cover	1
10	• Screw (#10-24 x 3/8")	4
11	• Receiver Block	1
12	• Bushing	1
13	• Leg Section Weldment	1
14	• Hex Screw (5/16"-18 x 1")	4
15	Pin	1
16	Set Screw	1
17	Refer to: "Foot Extension"	Ref

Always Specify Model & Serial Number

Leg Section

Models:
 Serial Numbers:

All



Refer To:

Back Actuator / Limit Switches E-20
 Tilt Actuator / Limit Switch E-21
 Foot Actuator / Limit Switches E-22

Go To Page:

Item	Description	Qty.
1	Screw	1
2	Seat Section Substrate	1
3	Support Plate	1
4	Harness Cover	1
5	Tubing Bracket	1
6	Rubber Strip	2
7	Cover (left)	1
8	Screw (#10-24 x 3/8")	7
9	Seat Weldment	1
10	Cover (right)	1
11	Shoulder Bolt (5/8" x 3/4")	2
12	Washer, nylon	1
13	Flange Bearing	2
14	Jam Nut (1/2"-13)	2

For Actuators & Limit Switches, refer to:

15	"Back Actuator / Limit Switches"	Ref
16	"Foot Actuator / Limit Switches"	Ref
17	"Tilt Actuator / Limit Switch"	Ref

Always Specify Model & Serial Number

Models:
Serial Numbers:

All

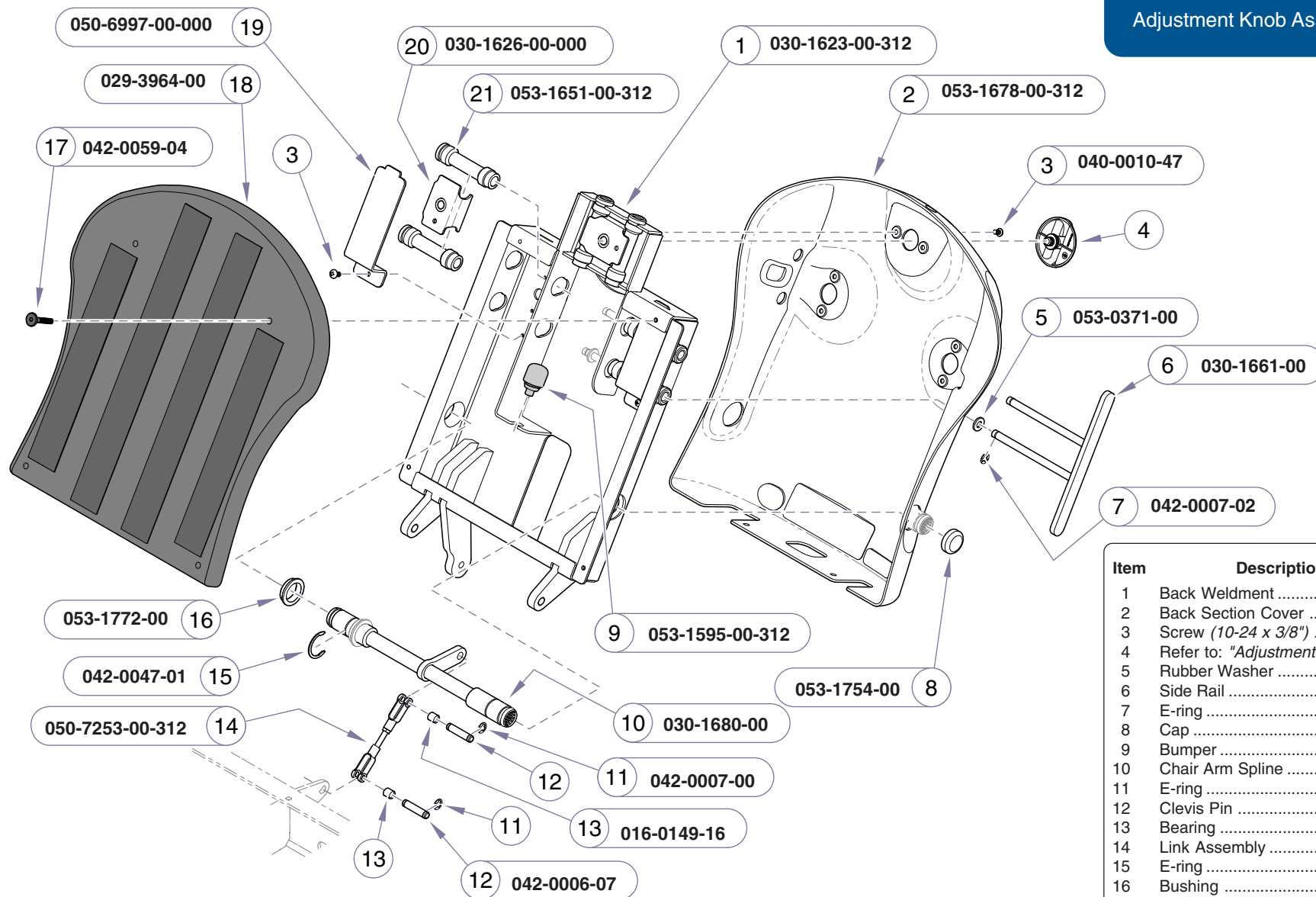
Seat Section

E-9

Refer To:

Go To Page:

Adjustment Knob Assembly E-11



Item	Description	Qty.
1	Back Weldment	1
2	Back Section Cover	1
3	Screw (10-24 x 3/8")	8
4	Refer to: "Adjustment Knob Assembly" ... Ref	
5	Rubber Washer	2
6	Side Rail	2
7	E-ring	2
8	Cap	2
9	Bumper	1
10	Chair Arm Spline	1
11	E-ring	4
12	Clevis Pin	2
13	Bearing	2
14	Link Assembly	1
15	E-ring	2
16	Bushing	2
17	Screw	4
18	Back Substrate	1
19	Clamp Retainer	2
20	Clamp	3
21	Bushing	6

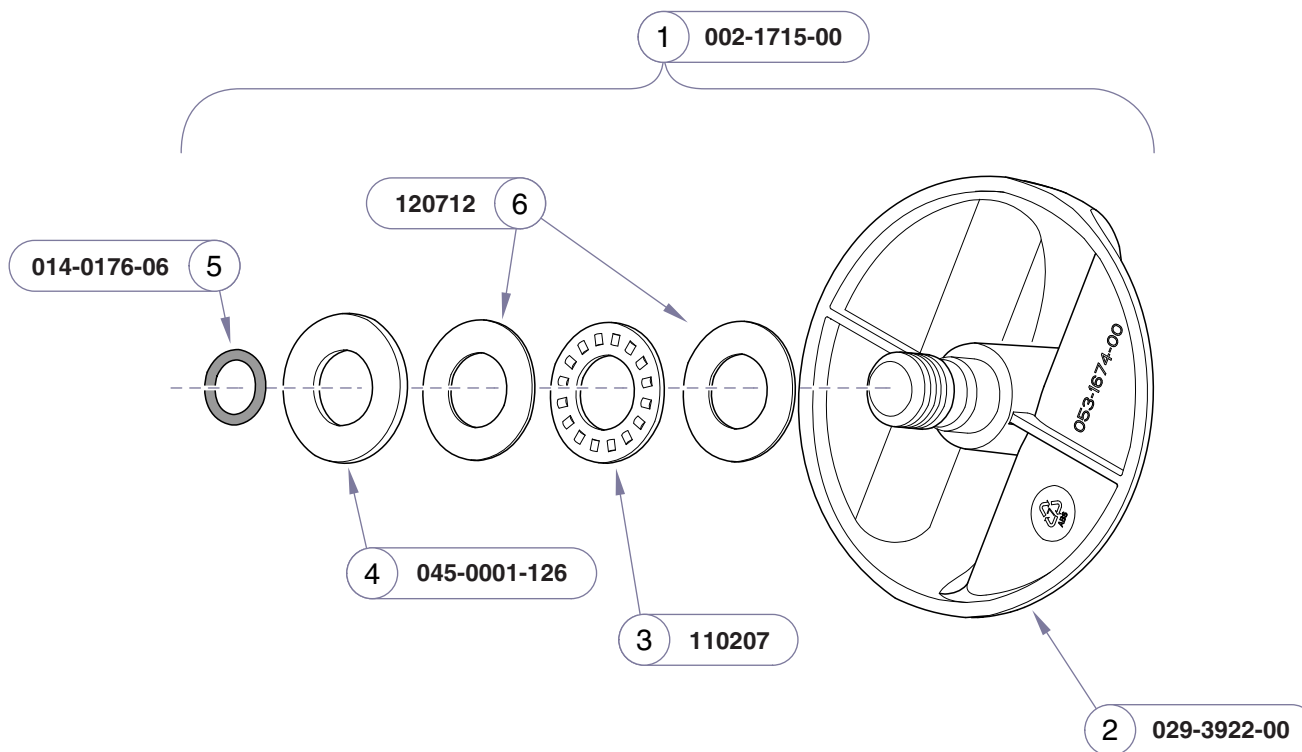
Always Specify Model & Serial Number

MA765300i

Back Section

Models:
Serial Numbers:

All



Rev. 3/10

Item	Description	Qty.
1	Knob Assembly (<i>incl. items 2 thru 6</i>)	4
2	• Knob Handle	1
3	• Needle Thrust Bearing	1
4	• Spring Washer	1
5	• O-ring	1
6	• Thrust Washer	2

Always Specify Model & Serial Number

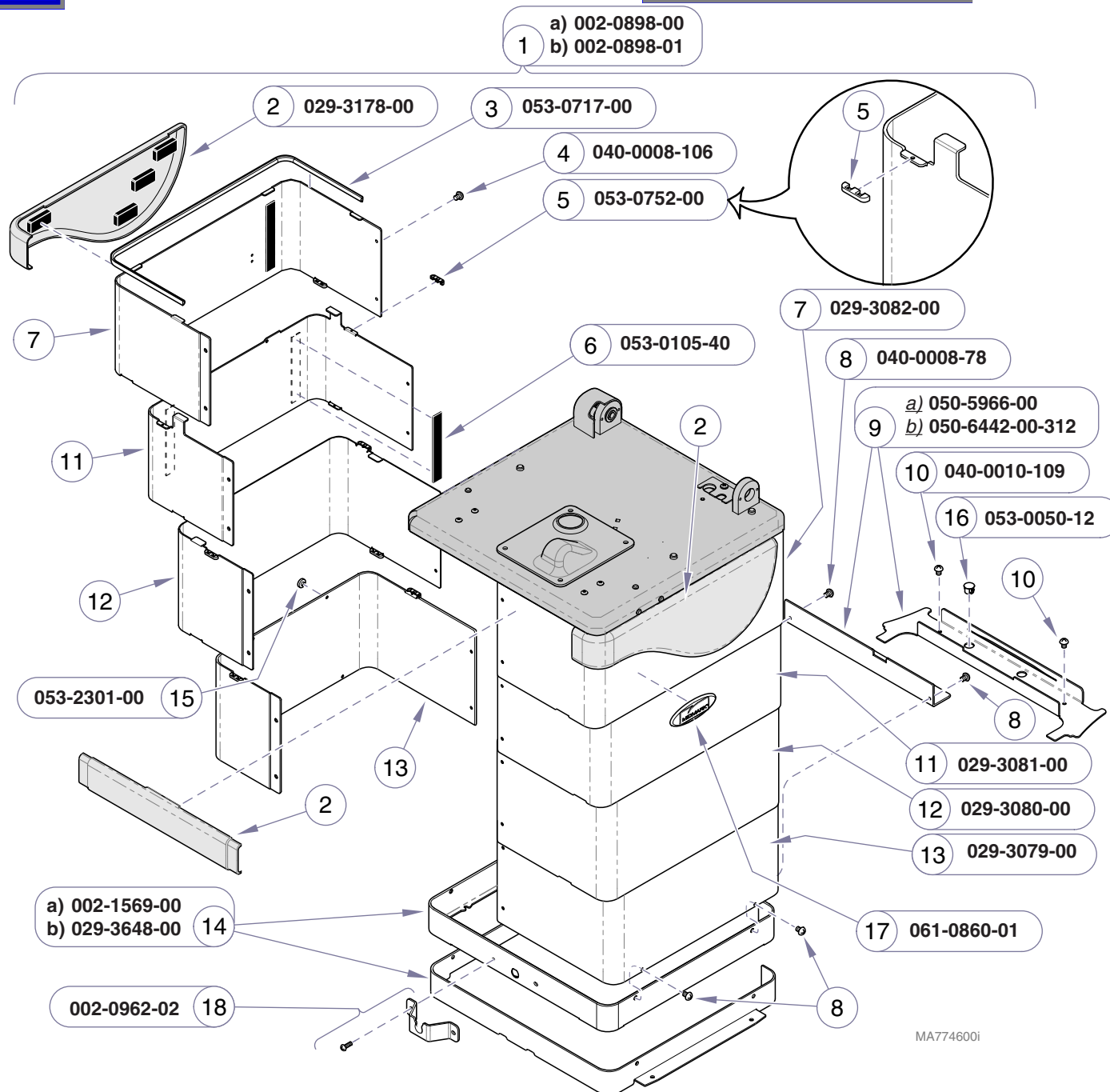
MA765500i

Models:
Serial Numbers:

All

**Adjustment Knob
Assembly**

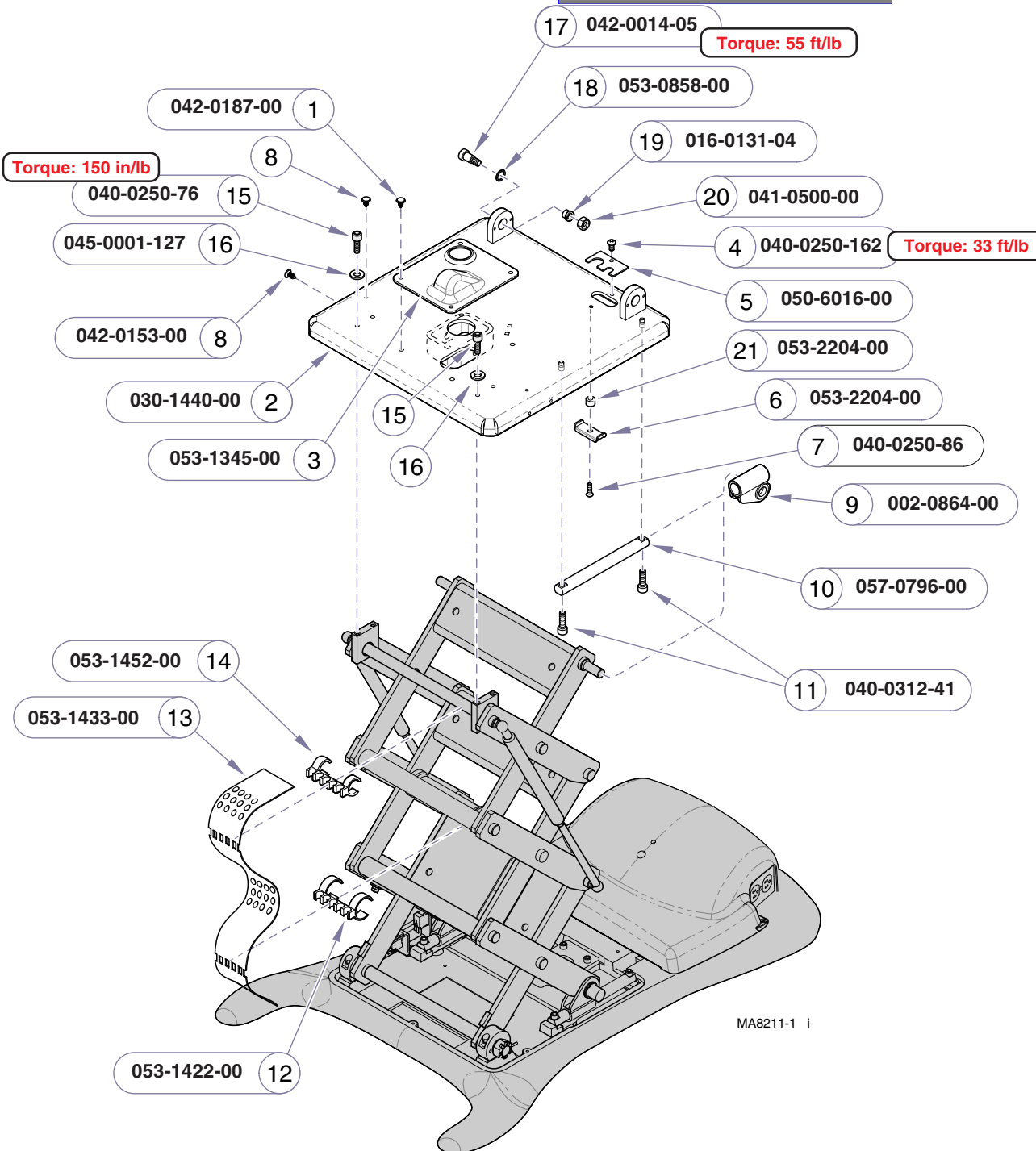
E-11

**NOTE:**

Shroud assemblies include all Snap-on-Guides (item 5) and nutserts.

Item	Description	Qty.
1	Shroud Set (incl. items 2 thru 17):	
	a) Standard base	1
	b) Rotational base	1
2	• Cladding Set (includes RH, LH, & front pieces)	1
3	• Outer Shroud Seal	2
4	• Screw (#8-32 x 1/4" truss head)	10
5	• Snap-on-guide	24
6	• Velcro Loop	4
7	• Outer Shroud Assembly	2
8	• Screw (#8-32 x 1/4" Pan Head)	10
9	• Wire Harness Cover:	
	a) Standard base	1
	b) Rotational base	1
10	• Screw	2
11	• Middle Outer Shroud Assembly	2
12	• Middle Inner Shroud Assembly	2
13	• Inner Shroud	2
14	• Shroud Spacer:	
	a) Standard base (incl. two #8-32 x 3/8" screws)	1
	b) Rotational base	1
15	• Bumper	2
16	• Hole Plug	2
17	• Midmark Nameplate	1
18	Control Cord Bracket Kit (incl. bracket, two #8-32 x 3/8" screws, & two nuts)	1

Always Specify Model & Serial Number



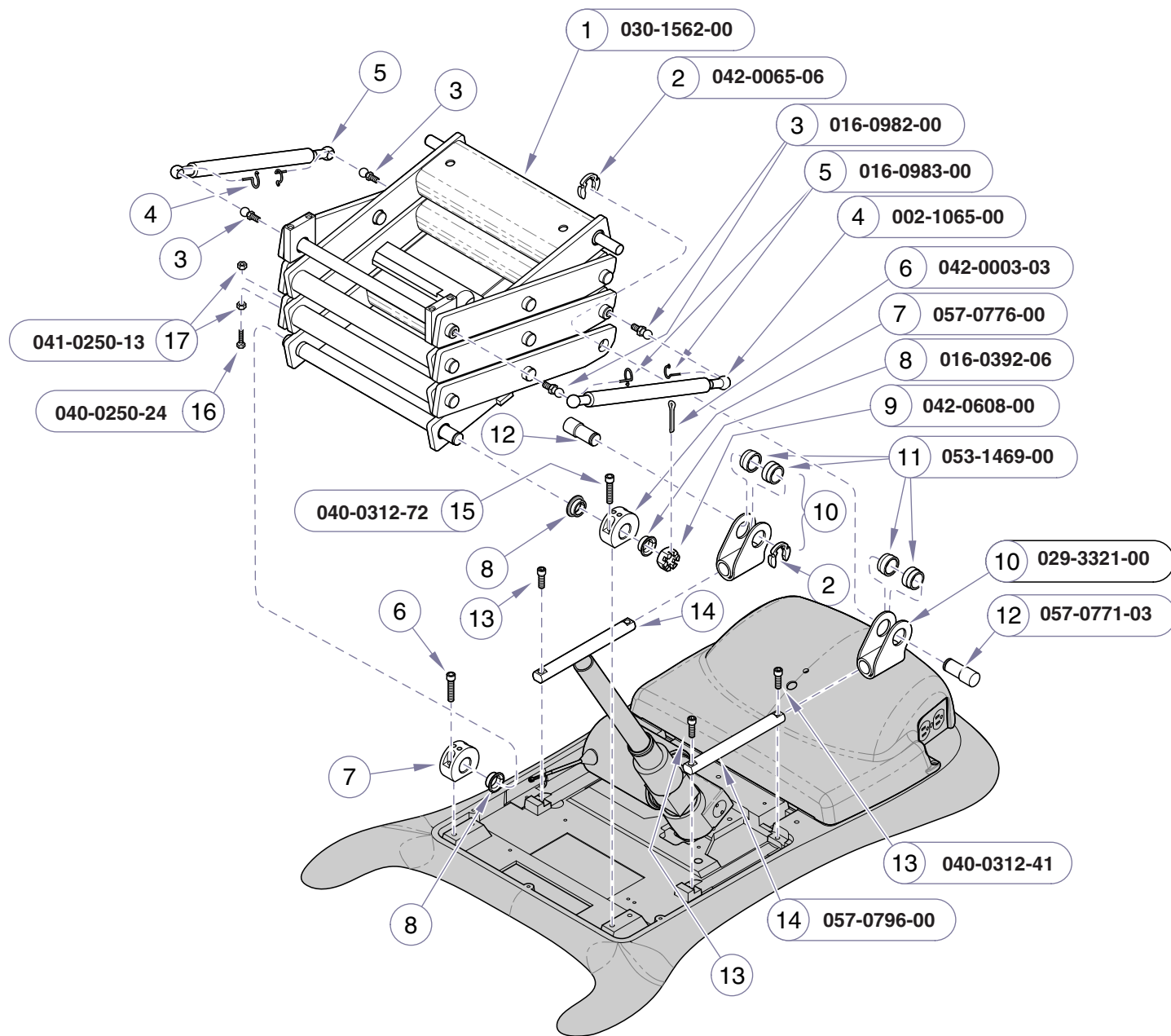
Item	Description	Qty.
1	Barbed Push Fastener	4
2	Column Adaptor Weldment	1
3	Screw Tip Cover	1
4	Screw (1/4-20 x 1/2" Phillips)	1
5	Corrugated Tubing Bracket	1
6	Cable Restraint Clamp	1
7	Screw (1/4-20 x 3/4" Phillips Head)	1
8	Rivot Drive	6
9	Upper Glide Kit (incl. two glides)	1
10	Guide Bar	2
11	Cap Screw (5/16-18 1" Socket Head)	4
12	Lower Wire Clamp	2
13	Wire Ribbon Guide	1
14	Upper Wire Clamp	2
15	Cap Screw (1/4-20 x 3/4" Socket Head) (Note: apply permanant thread adhesive) ...	4
16	Washer	4
17	Shoulder Bolt (5/8" x 3/4")	2
18	Washer, nylon	1
19	Flange Bearing	2
20	Jam Nut (1/2"-13)	2
21	Spacer	1

Always Specify Model & Serial Number

Models:
Serial Numbers:

All

**Column Top
Assembly**



MA760800i

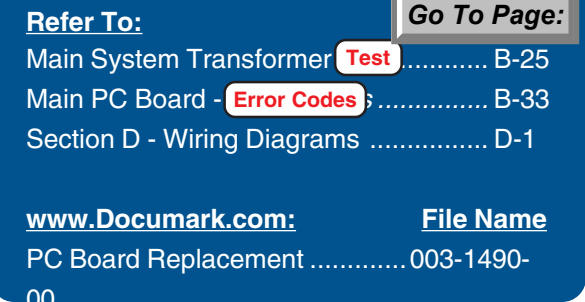
Item	Description	Qty.
1	Scissors Assembly	1
2	Clip Ring (3/4")	2
3	Gas Spring Ball Stud	4
4	Gas Spring Kit (includes two springs & four ball clips)	1
5	• Gas Spring Ball Clip	4
6	Cotter Pin	1
7	Main Bearing Housing	2
8	Flange Bearing	3
9	Slotted Nut	1
10	Slide Weldment (incl. item 11)	2
11	• Bearing Insert	2
12	Guide Shaft	2
13	Bolt (5/16-18 x 1") socket head cap	4
14	Guide Bar	2
15	Bolt (5/16-18 x 1-1/2") socket head cap	4
16	Limit Switch Actuator Bolt (1/4-20 x 1")	1
17	Nut (1/4-20)	2

Always Specify Model & Serial Number

Scissor Components

Models:
Serial Numbers:

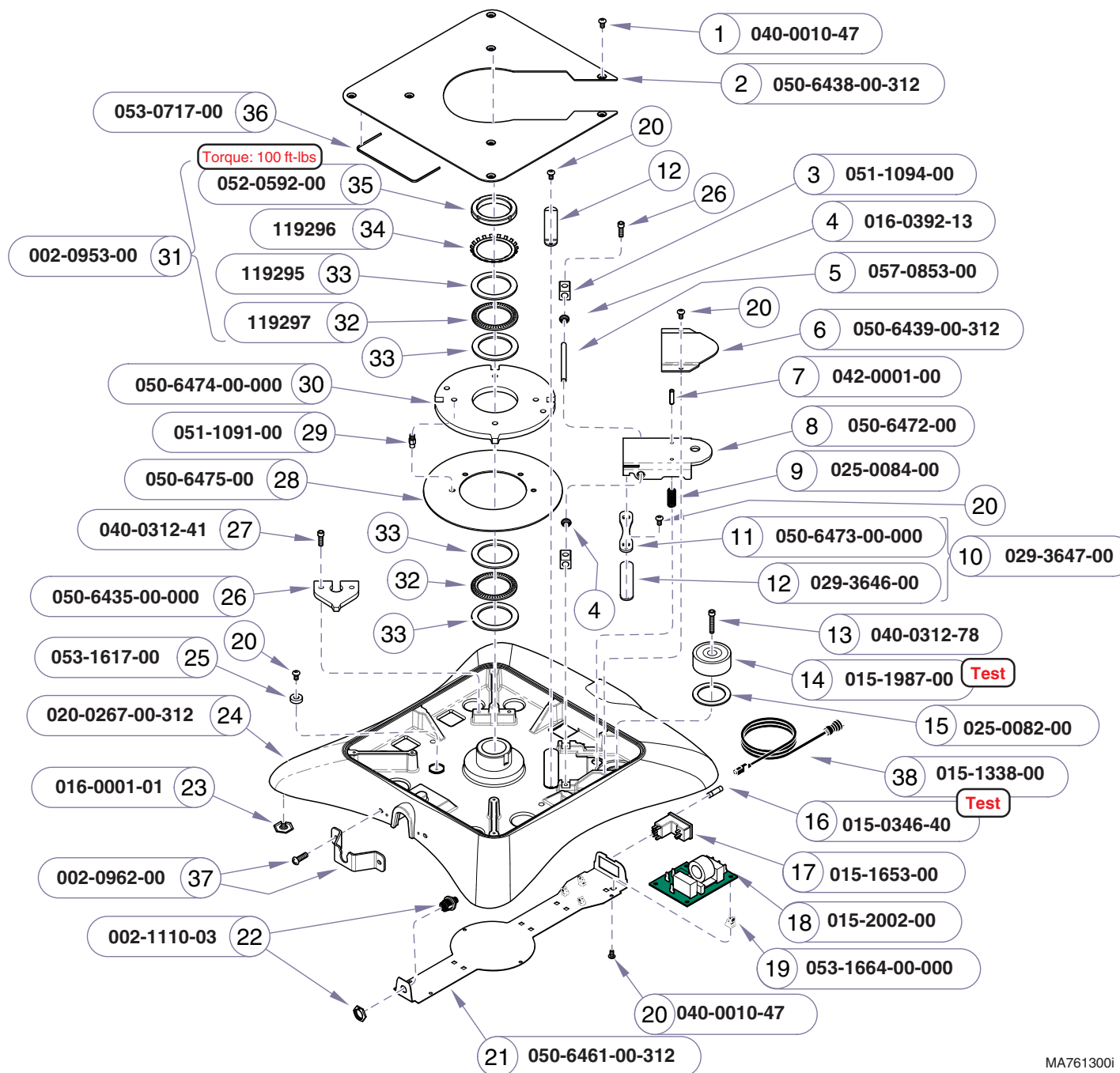
All



Item	Description	Qty.
1	Control Cord Bracket Kit (incl. bracket & #10-24 x 1/2" screws)	1
2	Power Light (w/wire harness) Refer to: "Section D"	Ref
3	Cable Holder	1
4	Connection Port (includes nut) Refer to: "Section D"	Ref
5	Screw (10-24 x 1/2")	6
6	Lockwasher	3
7	Main System Transformer	1
8	Rubber Washer	4
9	8 ft Cordset (North American) Note: Export .. units require 9A152 International Cordsets.	1
10	Fuse (6.3A, 250V, Type "T", 5 x 20mm)	2
11	Power Inlet	1
12	Inlet Plate	1
13	Cover Plate (models w/o receptacles)	2
14	Grounding Plate	1
15	Base Casting	1
16	Leveling Feet	4
17	Harness Clip	1
18	Screw (#10-24 x 3/8")	12
19	Base Plate	1
20	Main PC Board: a) Non-Programmable	1
	b) Non-Programmable (Refurbished)	1
	c) Programmable	1
	d) Programmable (Refurbished)	1
21	Standoff	12
22	Dust Cap	1
23	PC Board Cover	1

Always Specify Model & Serial Number

E-15



MA761300i

Refer To:

Electro-magnet	Test	B-39
EMI Filter Board	Test	B-40

Go To Page:

Item	Description	Qty.
1	Screw(#10-24 x 3/8")	5
2	Rotational Base Cover	1
3	Shaft Mount	2
4	DU Bearing	2
5	Bearing Shaft	2
6	Brake Lever Cover	1
7	Roll Pin	2
8	Brake Lever	1
9	Spring	2
10	Swivel Plate Assy(incl. items 11 & 12)	1
11	• Swivel Plate	1
12	• Brake Pad Assembly	2
13	Cap Screw (5/16"x18 x1 3/4")	1
14	Electromagnet Assembly	1
15	Wave Spring	1
16	Fuse (250V, 6.3A, Type-T, Slo-Blo)	2
17	Power Inlet	1
18	EMI Filter Board	1
19	PC Board Standoff	4
20	Screw(#10-24 x 3/8")	14
21	Wire Trough Cover	1
22	I/O Harness Assembly	1
23	Leveling Screw	4
24	Lower Base	1
25	Delrin Spacer	1
26	Rotational Stop Bracket	1
27	Screw (5/16"-18 x 1")	4
28	Brake Disc	1
29	Brake Disc Shoulder Screw	2
30	Rotation Wheel	1
31	Bearing Kit (incl. items 32 thru 35)	1
32	• Thrust bearing	2
33	• Race Washer (2.75 id X 3.62 od)	4
34	• Lockwasher	1
35	• Lock Nut	1
36	Outer Seal	3
37	Control Cord Bracket Kit	1
38	8 ft Cordset (North American) Note: Export .. units require 9A152 International Cordsets.	1

Always Specify Model & Serial Number

Models: 641 (-004 & -005)
Serial Numbers: All

Rotational Base:
 Lower Section

Refer To:

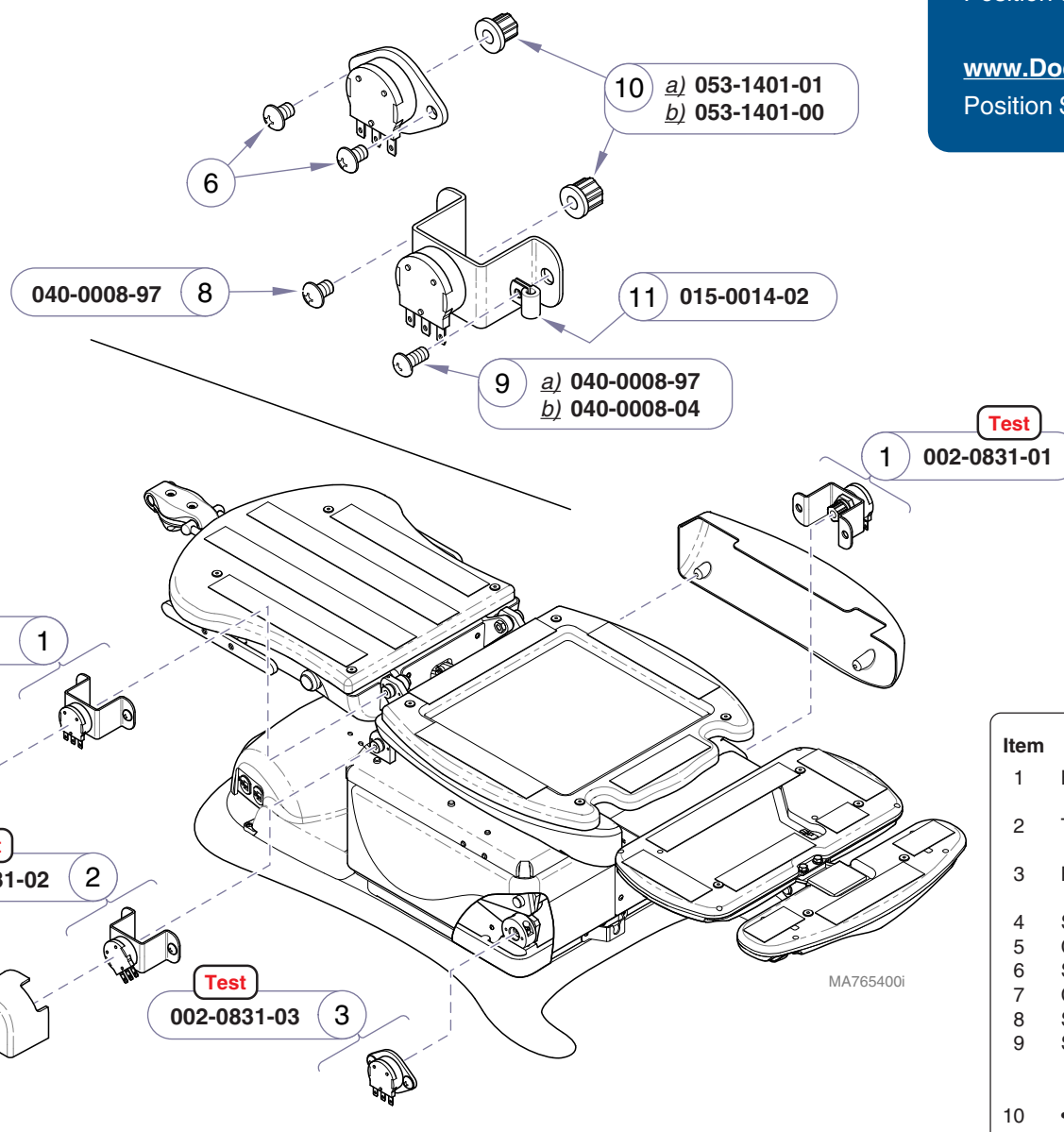
Position Sensor **Test** B-27

Go To Page:

www.Documark.com:

File Name

Position Sensor Replacement ...003-1473-00



MA765400i

MA765400i

Item	Description	Qty.
1	Back / Foot Sensor Kit (w/Bracket) (incl. sensor, bracket, coupler)	2
2	Tilt Sensor w/Bracket Kit (incl. sensor, bracket, coupler)	1
3	Base Sensor Kit (w/Bracket) (incl. sensor, bracket, coupler)	1
4	Screw (#10-24 x 1/4")	2
5	Cover (Back Sensor)	1
6	Screw (#10-24 x 3/8")	3
7	Cover (Tilt Sensor)	1
8	Screw (#10-24 x 3/8")	5
9	Screw: a) Back & Foot (#8-32 x 1/4")	3
	b) Tilt (#8-32 x 3/8")	1
10	• Coupler: a) Back / Tilt / Base	1
	b) Foot	1
11	Wire Clamp (Tilt Sensor only)	1

Always Specify Model & Serial Number

Refer To:

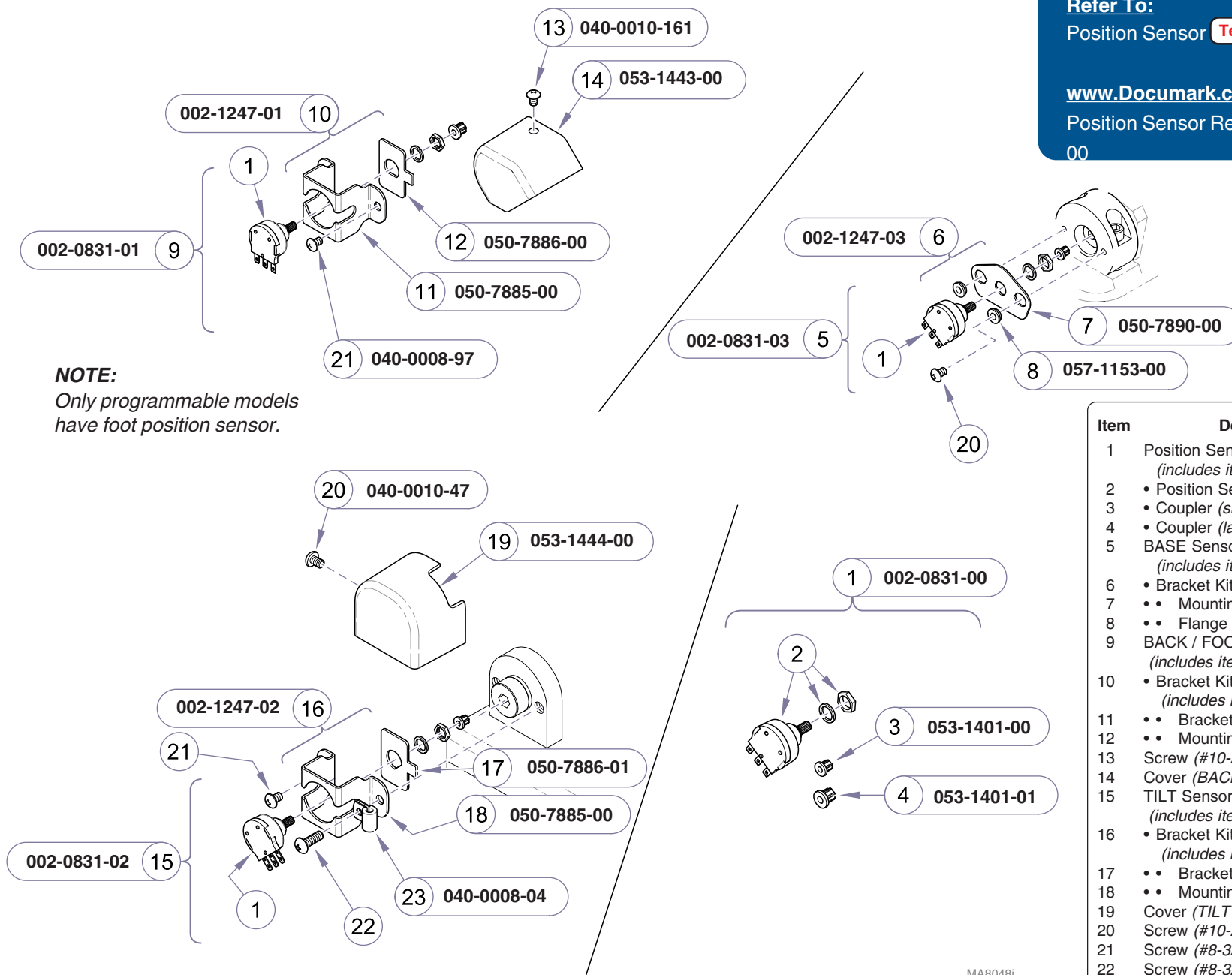
Position Sensor **Test** B-27

Go To Page:

www.Documark.com:

File Name

Position Sensor Replacement ...003-1473-00



Item	Description	Qty.
1	Position Sensor <u>Only</u> Kit (includes items 2 thru 4)	4
2	• Position Sensor (incl. washer & nut)	1
3	• Coupler (small: for Foot)	1
4	• Coupler (large: for Base / Back / Tilt)	1
5	BASE Sensor Kit w/Bracket (includes items 1 & 6)	1
6	• Bracket Kit: BASE (incl. items 7 & 8)	1
7	• • Mounting Plate	1
8	• • Flange Bushing	2
9	BACK / FOOT Sensor Kit w/Bracket (includes items 1 & 10)	2
10	• Bracket Kit: BACK / FOOT (includes items 11 & 12)	2
11	• • Bracket	1
12	• • Mounting Plate	1
13	Screw (#10-24 x 1/4")	1
14	Cover (BACK Sensor)	1
15	TILT Sensor Kit w/Bracket (includes items 1 & 16)	1
16	• Bracket Kit: TILT (includes items 17 & 18)	1
17	• • Bracket	1
18	• • Mounting Plate	1
19	Cover (TILT Sensor)	1
20	Screw (#10-24 x 3/8")	3
21	Screw (#8-32 x 1/4")	5
22	Screw (#8-32 x 3/8")	1
23	Wire Clamp	1

Always Specify Model & Serial Number

Models:
Serial Numbers:**641**
V775313 thru present

Position Sensors

E-18.1

Refer To:

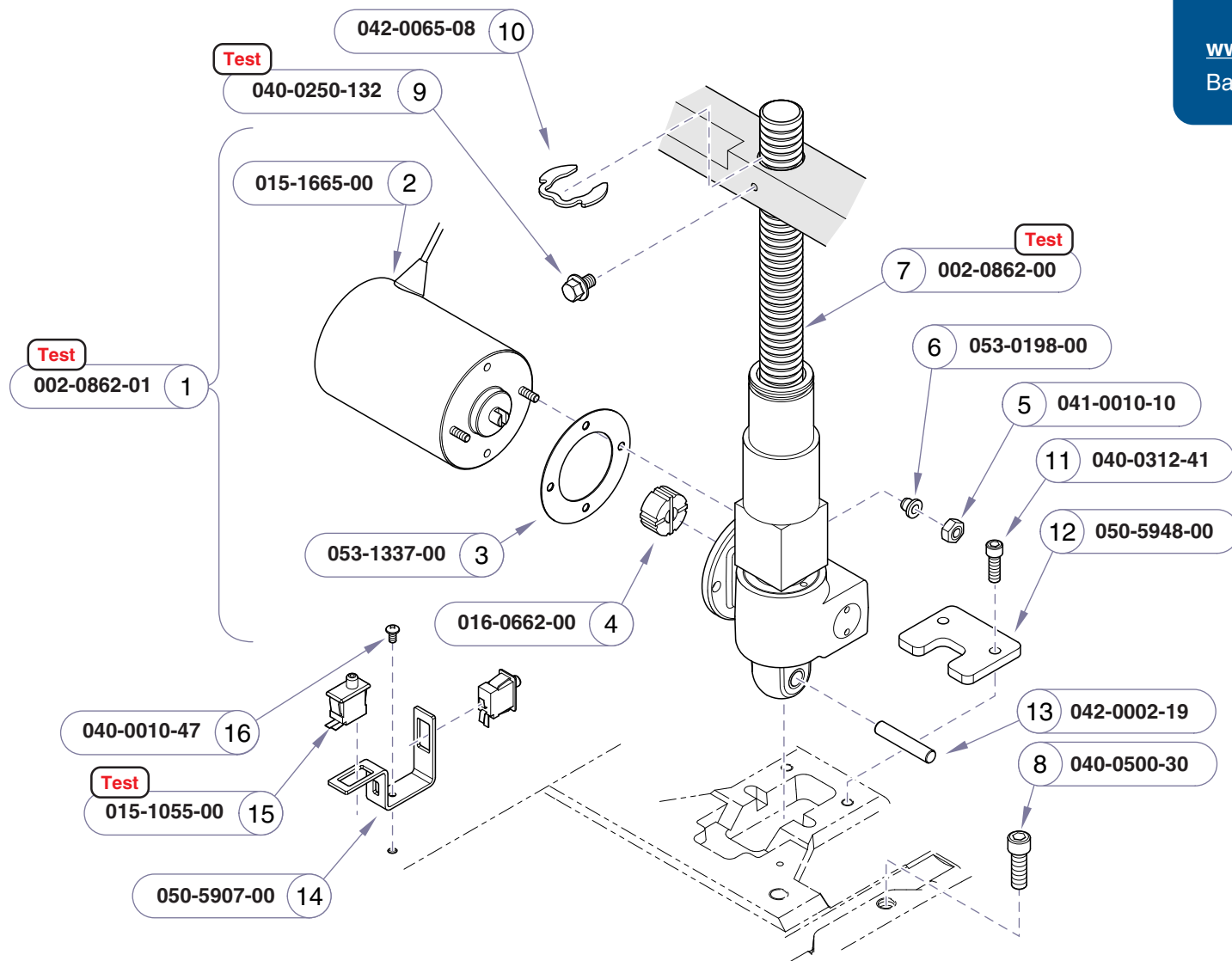
Base Actuator **Test** B-6

Go To Page:

www.Documark.com:

File Name

Base Actuator Replacement 003-1739-00



MA7656001

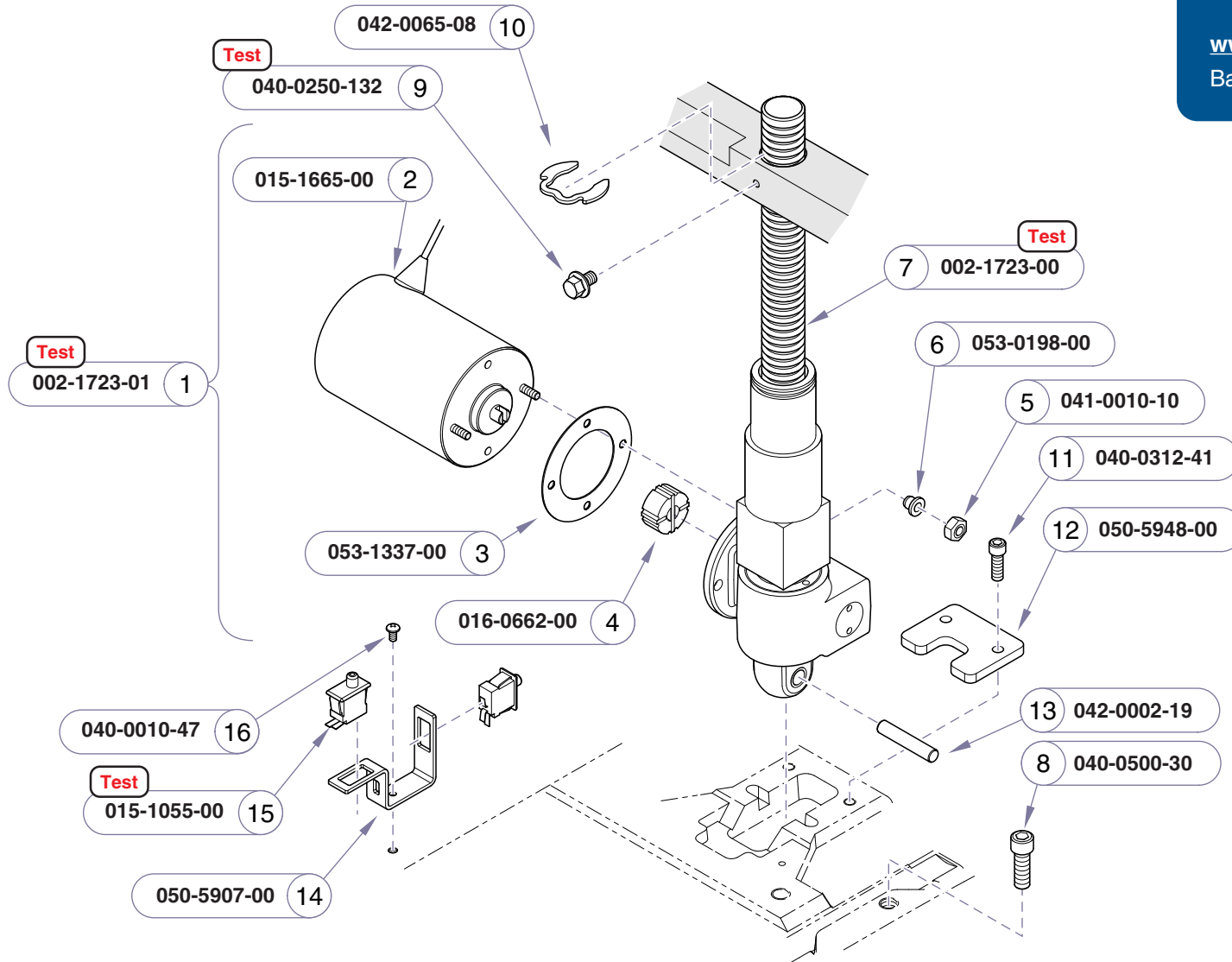
Item	Description	Qty.
1	Base Actuator Kit (includes items 2 thru 7)	1
2	• Motor	1
3	• Motor Isolator	1
4	• Coupler	1
5	• Nut	2
6	• Shoulder Washer	2
7	• Actuator Kit w/o motor (includes item 8)	1
8	• • Stop Bolt	1
9	Hex Bolt (1/4"-20 x 3/8")	1
10	Klip Ring	1
11	Screw (5/16"-18 x 1")	2
12	Retaining Plate	1
13	Dowel Pin	1
14	Limit Switch Bracket	1
15	Limit Switch	2
16	Screw (#10-32 x 3/8")	1

Always Specify Model & Serial Number

Base Actuator /
Limit SwitchesModels:
Serial Numbers:

641

V2200 thru V1399451



MA765600i

Item	Description	Qty.
1	Base Actuator Kit (includes items 2 thru 7)	1
2	• Motor	1
3	• Motor Isolator	1
4	• Coupler	1
5	• Nut	2
6	• Shoulder Washer	2
7	• Actuator Kit w/o motor (includes item 8)	1
8	• • Stop Bolt	1
9	Hex Bolt (1/4"-20 x 3/8")	1
10	Klip Ring	1
11	Screw (5/16"-18 x 1")	2
12	Retaining Plate	1
13	Dowel Pin	1
14	Limit Switch Bracket	1
15	Limit Switch	2
16	Screw (#10-32 x 3/8")	1

Always Specify Model & Serial Number

Models: 641
Serial Numbers: V1399452 thru present

**Base Actuator /
Limit Switches**

E-19.1

Refer To:

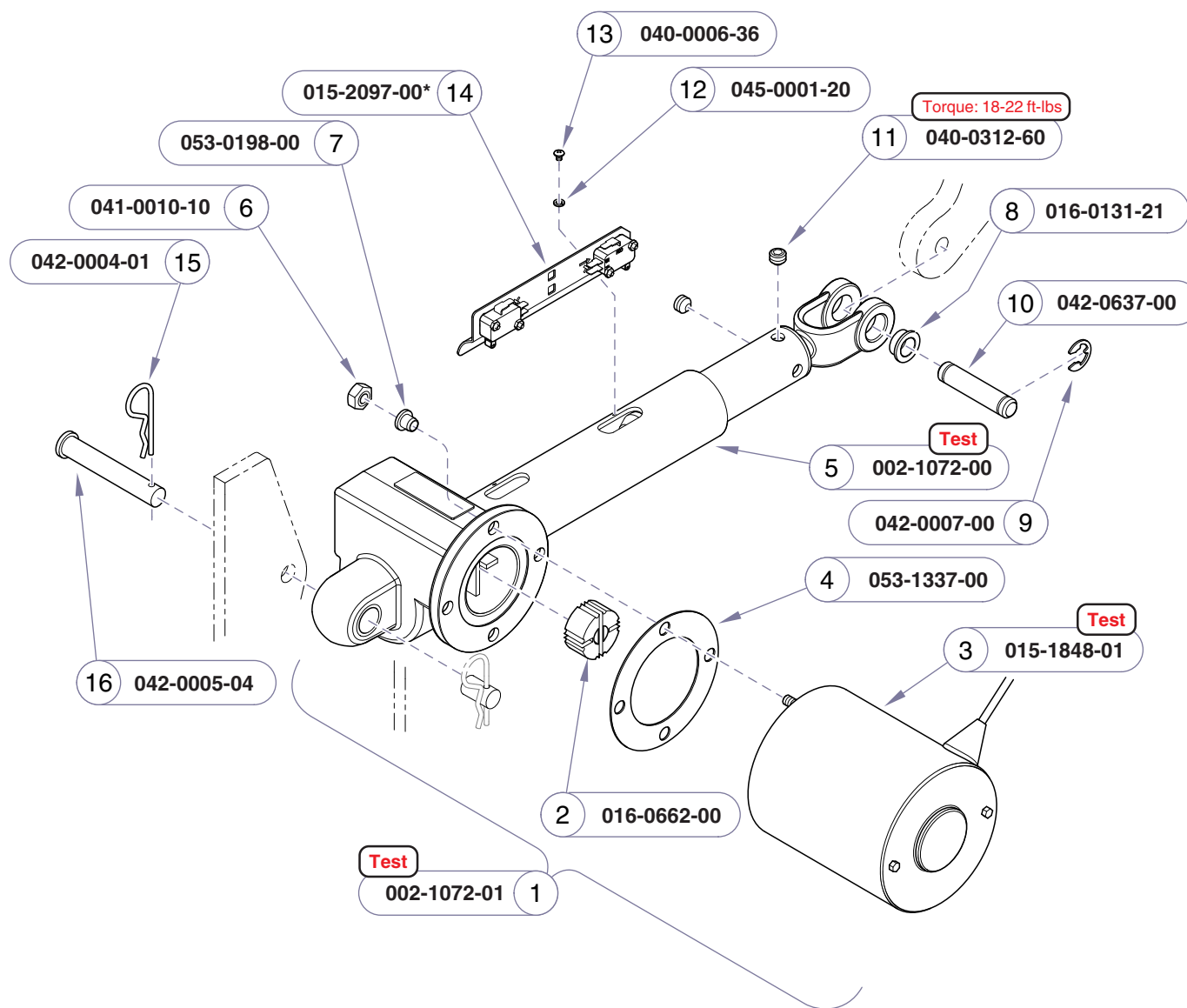
Back Actuator **Test** B-10

Go To Page:

www.Documark.com:

File Name

Back Actuator Replacement 003-1738-00

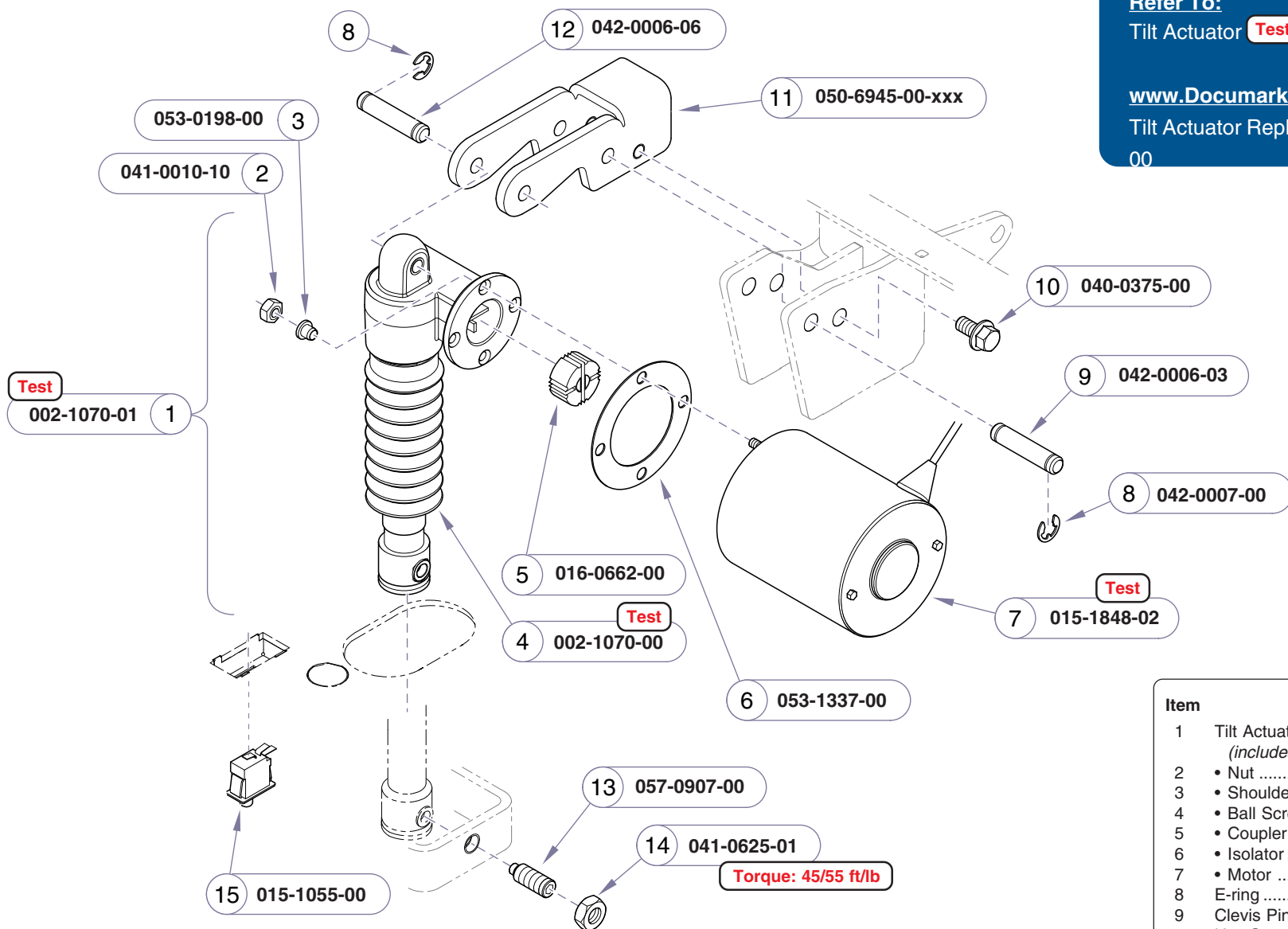


*The foot limit switch adjustment is critical to ensure proper operation (tolerance: 0.030").
Do not attempt to adjust the individual switches.

Item	Description	Qty.
1	Back Actuator Kit (includes items 2 thru 7)	1
2	• Coupler	1
3	• Motor	1
4	• Isolator	1
5	• Actuator Kit w/o motor	1
6	• Nut	2
7	• Shoulder Washer	1
8	• Bushing	2
9	Crescent Ring	2
10	Clevis Pin	1
11	Set Screw (5/16 - 18 x 1/4)	2
12	Lock Washer	2
13	Screw (#6-32 x 3/16")	2
14	Limit Switch Assembly (incl. switches, bracket, & harnesses)	1
15	Cotter Pin	1
16	Clevis Pin	1

Always Specify Model & Serial Number

MA764800I



Note: The Tilt UP limit is controlled by the Tilt Position Sensor.

Refer To:

Tilt Actuator **Test** B-13

Go To Page:

www.Documark.com:

File Name

Tilt Actuator Replacement 003-1742-00

Item	Description	Qty.
1	Tilt Actuator Kit (includes items 2 thru 7)	1
2	• Nut	2
3	• Shoulder Washer	2
4	• Ball Screw Assembly	1
5	• Coupler	1
6	• Isolator	1
7	• Motor	1
8	E-ring	4
9	Clevis Pin	1
10	Hex Screw (3/8"-16 x 3/4")	2
11	Bracket	1
12	Clevis Pin	1
13	Pivot Screw	2
14	Nut	2
15	Limit Switch (Tilt Down)	1

Always Specify Model & Serial Number

MA765100i

Models:
Serial Numbers:

All

Tilt Actuator /
Limit Switch

E-21

Refer To:

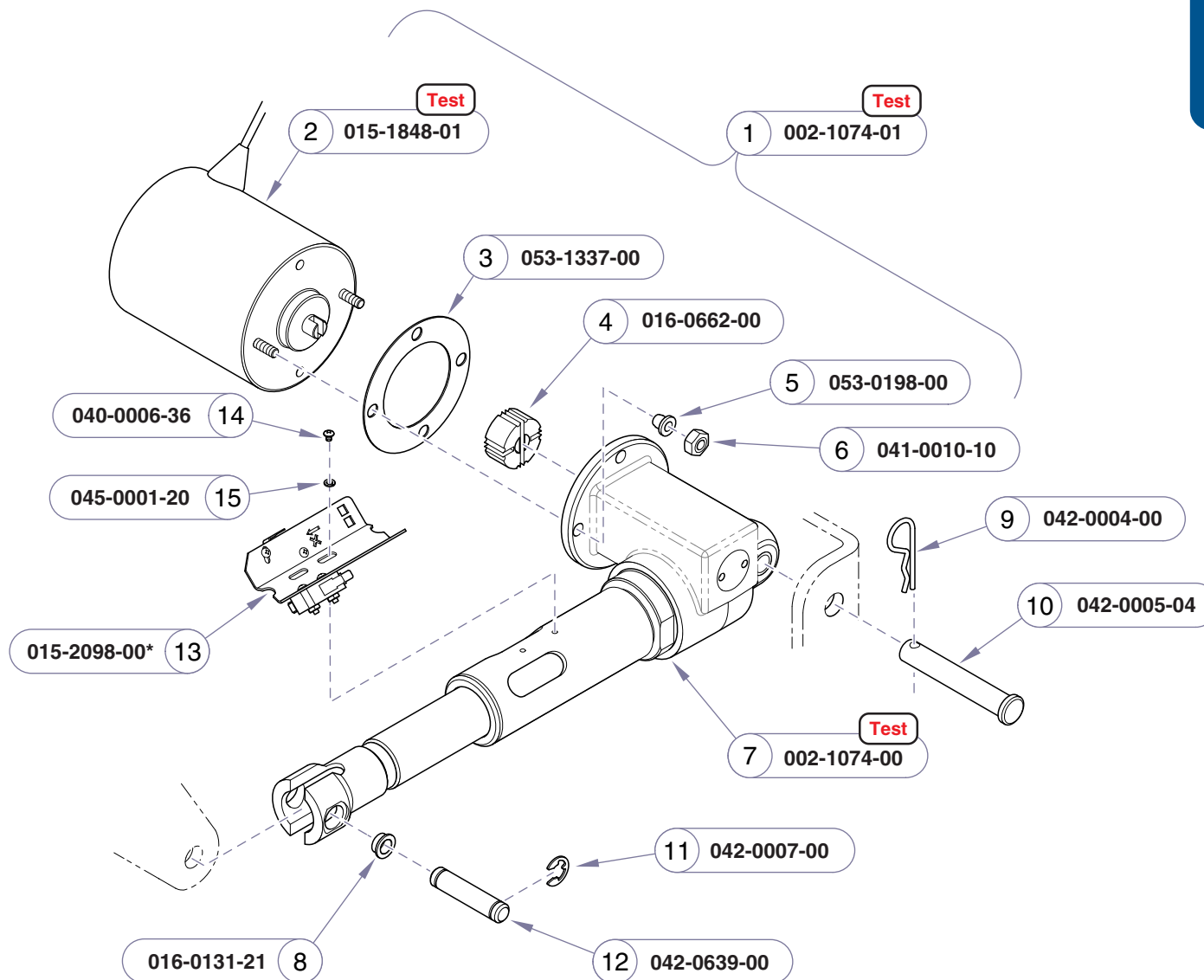
Foot Actuator **Test** B-17

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www.Documark.com:

File Name

Foot Actuator Replacement 003-1740-00



*The foot limit switch adjustment is critical to ensure proper operation (tolerance: 0.030").
Do **not** attempt to adjust the individual switches.

Item	Description	Qty.
1	Foot Actuator Kit (includes items 2 thru 8)	1
2	• Motor	1
3	• Isolator	1
4	• Coupler	1
5	• Shoulder Washer	2
6	• Nut	2
7	• Ball Screw Assembly	1
8	• Bushing	2
9	Cotter Pin	1
10	Clevis Pin	1
11	Crescent Ring	2
12	Clevis Pin	1
13	Limit Switch Assembly (incl. switches, bracket, & harnesses)	1
14	Screw (#6-32 x 3/16")	2
15	Lock Washer	2

Always Specify Model & Serial Number

MA765000i

Refer To:

Foot Control **Test** B-3Control Cord Continuity **Test** B-5

Go To Page:

Testa) 9A371002
b) 9A371001

1

2

a) 053-1685-01-312
b) 053-1685-00-312**Test**

3

002-1025-00

4

053-1688-00-312

Test

5

015-1675-00

Slide strain relief block (on cord)
into slot on base.

6

050-6870-00-312

7

042-0168-00

8

053-1439-00

NOTE: The linear-style foot control comes standard with all 641 models.

MA760600i

Item	Description	Qty.
1	Linear-Style Foot Control Assembly (includes items 2 thru 9):	
	a) Non-Programmable	1
	b) Programmable	1
2	• Keypad Assembly:	
	a) Non-Programmable	1
	b) Programmable	1
3	• Switch Membrane Kit	1
4	• Base	1
5	• Cord	1
6	• Base Plate	1
7	• Screw (3.5 mm x 10mm)	10
8	• Stem Bumper	7
9	• IPX1 Label (not shown)	1

Always Specify Model & Serial NumberModels:
Serial Numbers:

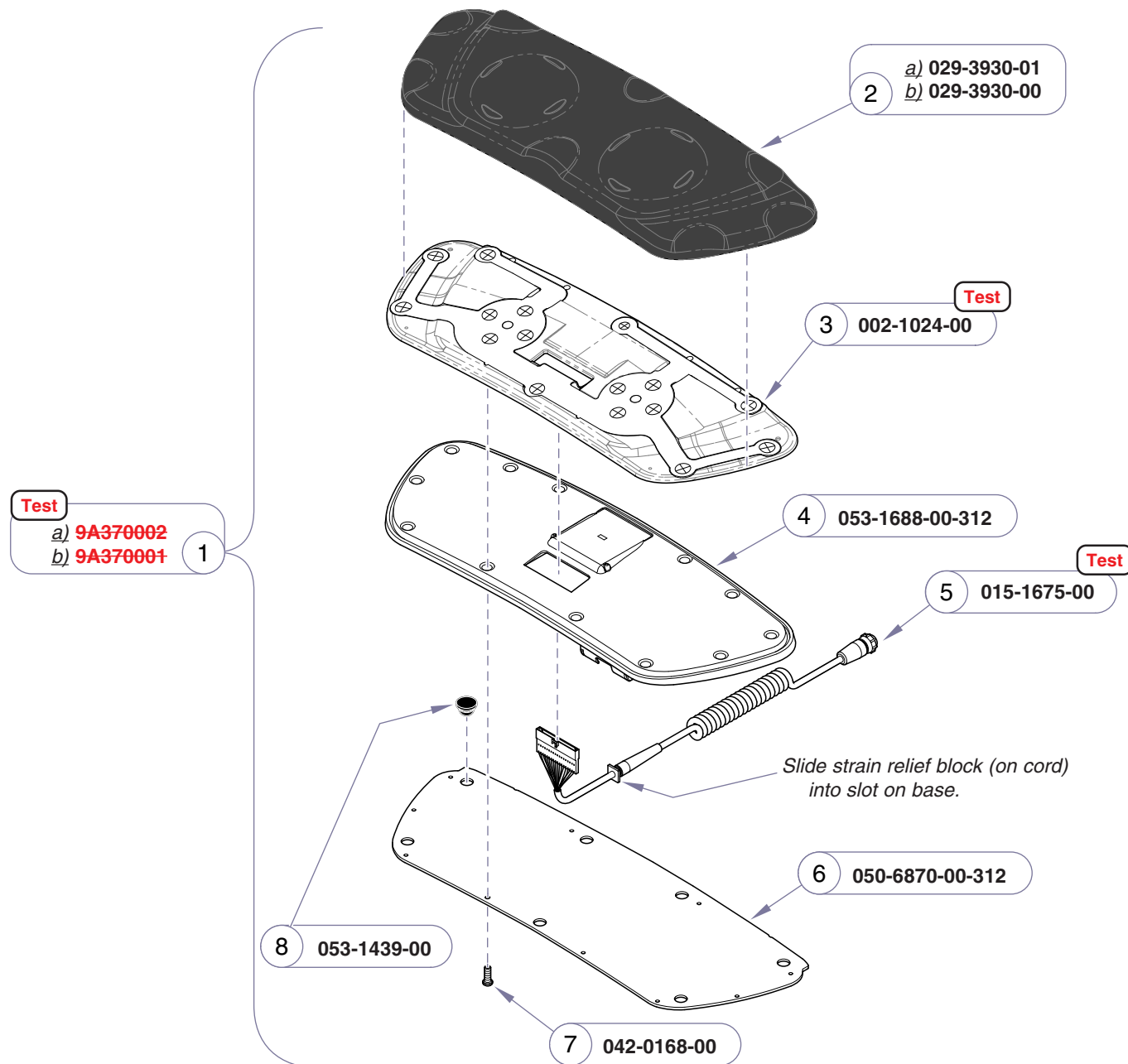
ALL

Foot Control
(Linear-Style)

Refer To:

Foot Control **Test** B-3
 Control Cord Continuity **Test** B-5

Go To Page:



Attention: Verify foot control style (Disc / Linear) when ordering parts.

Item	Description	Qty.
1	Disc-Style Foot Control Assembly (includes items 2 thru 9):	
	a) Non-Programmable	1
	b) Programmable	1
2	• Keypad Assembly:	
	a) Non-Programmable	1
	b) Programmable	1
3	• Switch Membrane Kit	1
4	• Base	1
5	• Cord	1
6	• Base Plate	1
7	• Screw (3.5mm x 10mm)	10
8	• Stem Bumper	5
9	• IPX1 Label (not shown)	1

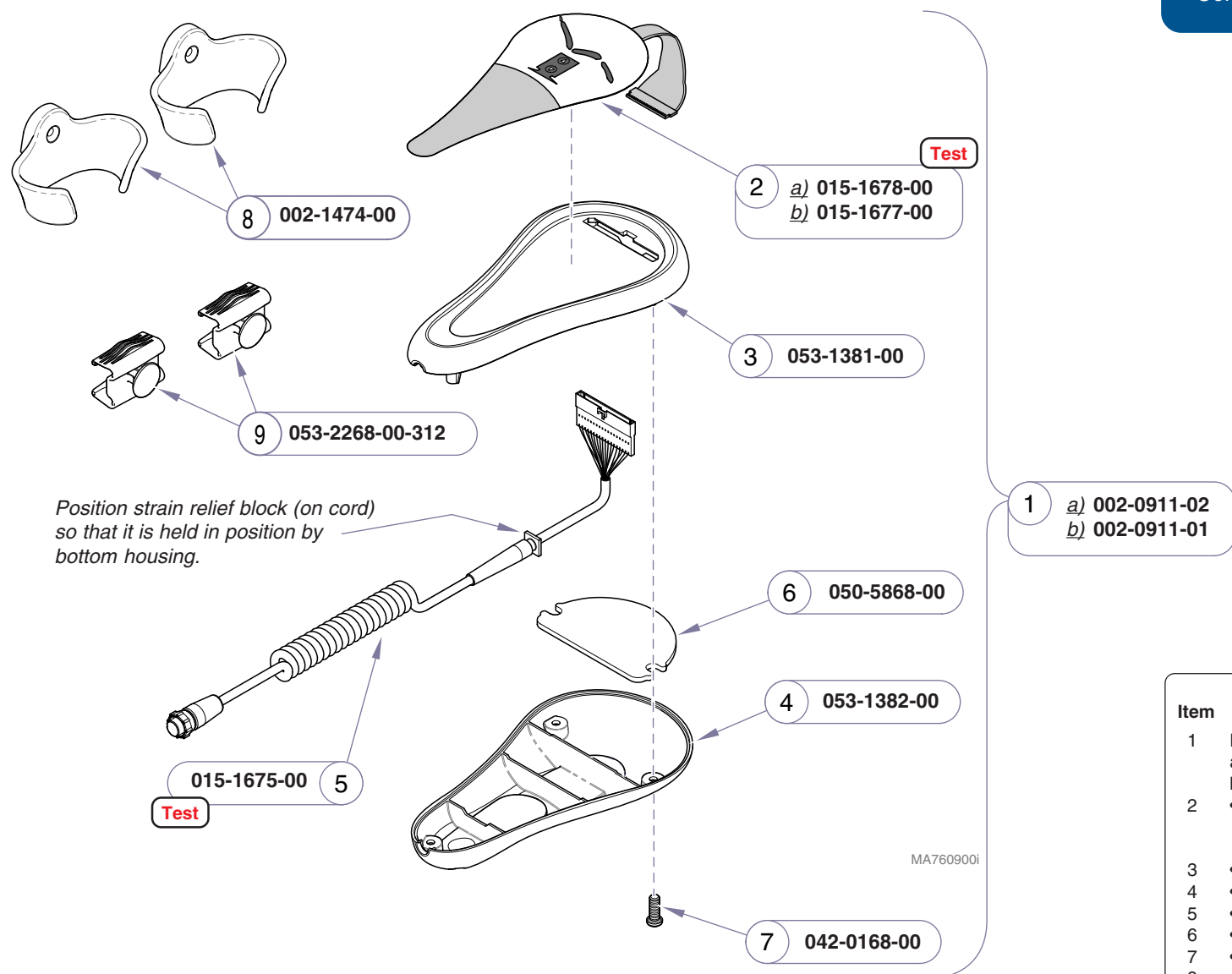
Always Specify Model & Serial Number

MA760700i

Refer To:

Hand Control **Test** B-3Control Cord Continuity **Test** B-5

Go To Page:



Item	Description	Qty.
1	Hand Control Assy. (incl. items 2 thru 8)	
	a) Programmable	1
	b) Non-Prog.	1
2	• Touch Pad:	
	a) Programmable	1
	b) Non-Prog.	1
3	• Top Housing	1
4	• Bottom Housing	1
5	• Retractable Cord Assembly	1
6	• Hand Control Weight	1
7	• Screw (3.5 x 10)	4
8	• Kit, Hand Control Holsters (Includes Items 9)	1
9	• Siderail Hand Control Brackets	2

Always Specify Model & Serial Number

Models:
Serial Numbers:

All

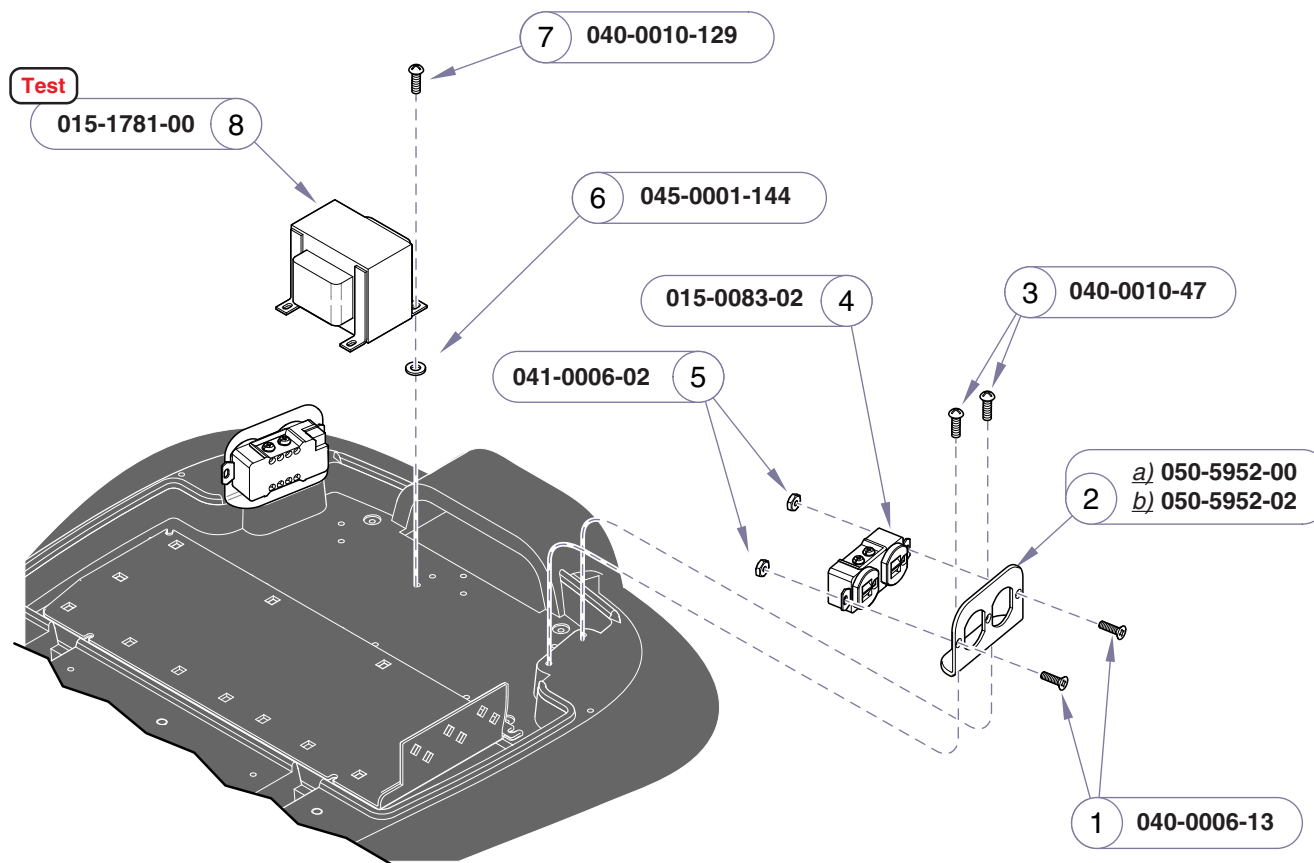
Hand Control

E-25

Refer To:

Isolation Transformer **Test** B-24

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Item	Description	Qty.
1	Screw (6-32 x self-tap)	4
2	Receptacle Plate	2
3	Screw (10-24 x 3/8" pan head)	4
4	Duplex Receptacle	2
5	Nut (6-32 hex)	4
6	Rubber Washer	4
7	Screw (10-24 x 1/2" Phillips)	4
8	Isolation Transformer	1

Always Specify Model & Serial Number

MA658102i

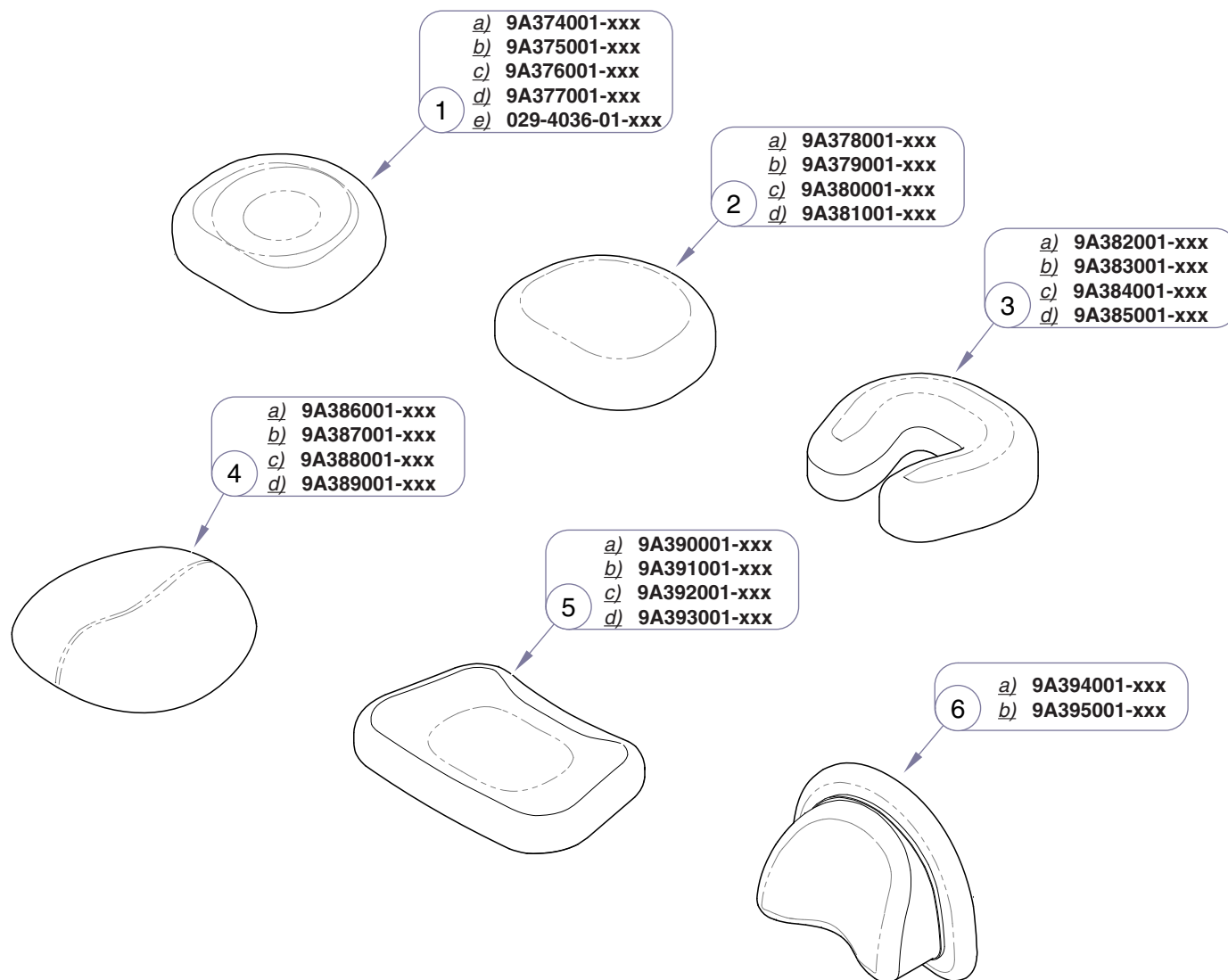
Chair Receptacles

Models:
Serial Numbers:
641 (-003)
 All

ATTENTION: Refer to *Current Color Options* link for appropriate numbers to replace -xxx.

Refer To:

Color Selector www.midmark.com



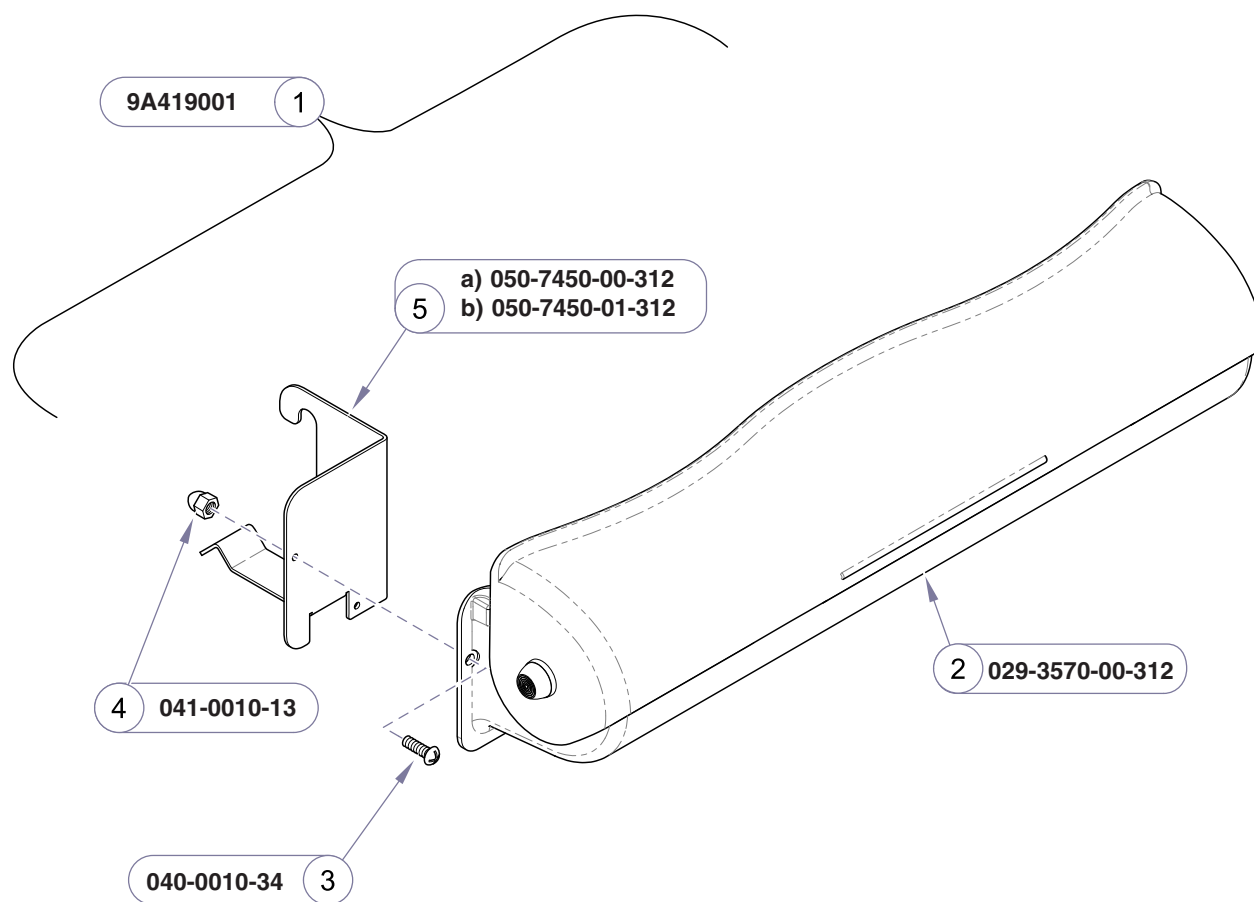
Item	Description	Qty.
1	Contoured Headrest (<i>standard on all 641s</i>):	
	a) <i>Premium</i>	1
	b) <i>Premium (Cal. 133)</i>	1
	c) <i>Ultra-Premium</i>	1
	d) <i>Ultra-Premium (Cal. 133)</i>	1
	e) <i>PVC-free</i>	1
2	Flat Headrest	
	a) <i>Premium</i>	1
	b) <i>Premium (Cal. 133)</i>	1
	c) <i>Ultra-Premium</i>	1
	d) <i>Ultra-Premium (Cal. 133)</i>	1
3	U-Shaped Headrest	
	a) <i>Premium</i>	1
	b) <i>Premium (Cal. 133)</i>	1
	c) <i>Ultra-Premium</i>	1
	d) <i>Ultra-Premium (Cal. 133)</i>	1
4	Oval-shaped Headrest	
	a) <i>Premium</i>	1
	b) <i>Premium (Cal. 133)</i>	1
	c) <i>Ultra-Premium</i>	1
	d) <i>Ultra-Premium (Cal. 133)</i>	1
5	Rectangular-shaped Headrest	
	a) <i>Premium</i>	1
	b) <i>Premium (Cal. 133)</i>	1
	c) <i>Ultra-Premium</i>	1
	d) <i>Ultra-Premium (Cal. 133)</i>	1
6	Magnetic Headrest	
	a) <i>Premium</i>	1
	b) <i>Ultra-Premium</i>	1

Always Specify Model & Serial Number

Models:
Serial Numbers:

The accessory headrests are compatible with all 641 models.

Optional Headrests

**NOTE:**

The Paper Roll Holder was optional at the initial release of this product. It became standard equipment from serial number V842432 thru present.

Item	Description	Qty.
1	Paper Roll Holder Assembly (includes item 2 thru 5)	1
2	• Paper Roll Housing	1
3	• Screw (#10-24 x 3/8")	4
4	• Acorn Nut	4
5	• Hanger Clip	
	a) L.H.	1
	b) R.H.	1

Always Specify Model & Serial Number

MA783401i

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[illegible]

SERVICE PARTS FAX ORDERING FORM

(Do not tear out this page. Photo copy this page for use only.)



IMPORTANT NOTES:

- 1) ***Use this form for all non-warranty orders only. Warranty orders must be telephoned in (1-800-643-6275).***
- 2) ***FAX number to send order to:
877-249-1793***
- 3) ***All emergency orders must be received @ Midmark by 1:00 pm EST.***
- 4) ***All underlined headings should be filled in prior to submittal.***

DATE: / / **TIME:** am
pm

METHOD OF SHIPMENT:

PRIORITY:

7

**NON-EMERGENCY ORDER {to ship
within 72 hours if part(s) are in stock.}**

11

**EMERGENCY ORDER {to ship within
24 hours if part(s) are in stock.}
[see note 3]**

DEALER P.O. #:

ACCOUNT #:

MODEL #:

SERIAL #:

SALES ORDER #

(if applicable)

NAME:

ADDRESS:

CITY:

STATE:

ZIP:

CONTACT:

PHONE:

FAX #:

SHIP TO:

[illegible]

CREDIT CARD INFORMATION

CARD TYPE _____ CARD # _____ - _____ - _____ EXP. DATE ____ / ____ / ____

NAME ON CARD _____ SIGNATURE _____

ATTENTION: CUSTOMER SERVICE DEPARTMENT

ADDITIONAL COMMENTS:

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